

KIBART, INC. © 2007 FILE: P:\2013\13055.03\DRAWINGS\HARFORD COUNTY SHERIFF'S OFFICE\SHEETS\MECHANICAL\13055.03-CS001 COVER SHEET.DWG PLOTTED: 2015-08-25 BY: DAVID B. PANEK

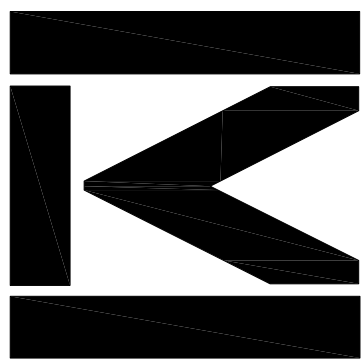
# BOILER, SWITCHGEAR, AND GENERATOR REPLACEMENT

BID DOCUMENTS  
MARCH 21, 2016

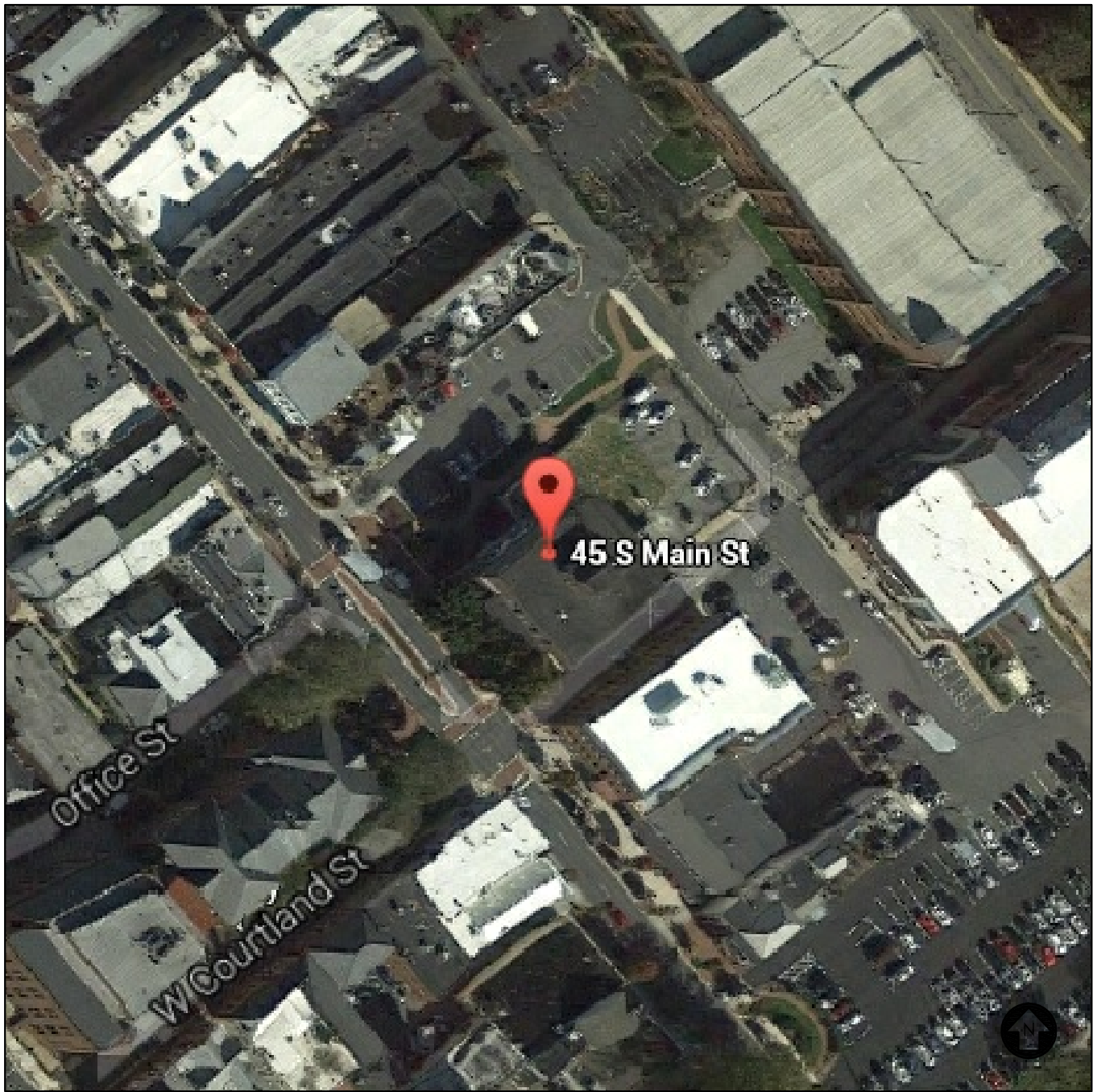
45 S MAIN ST  
BEL AIR, MD 21014

BID NO.:  
16-168

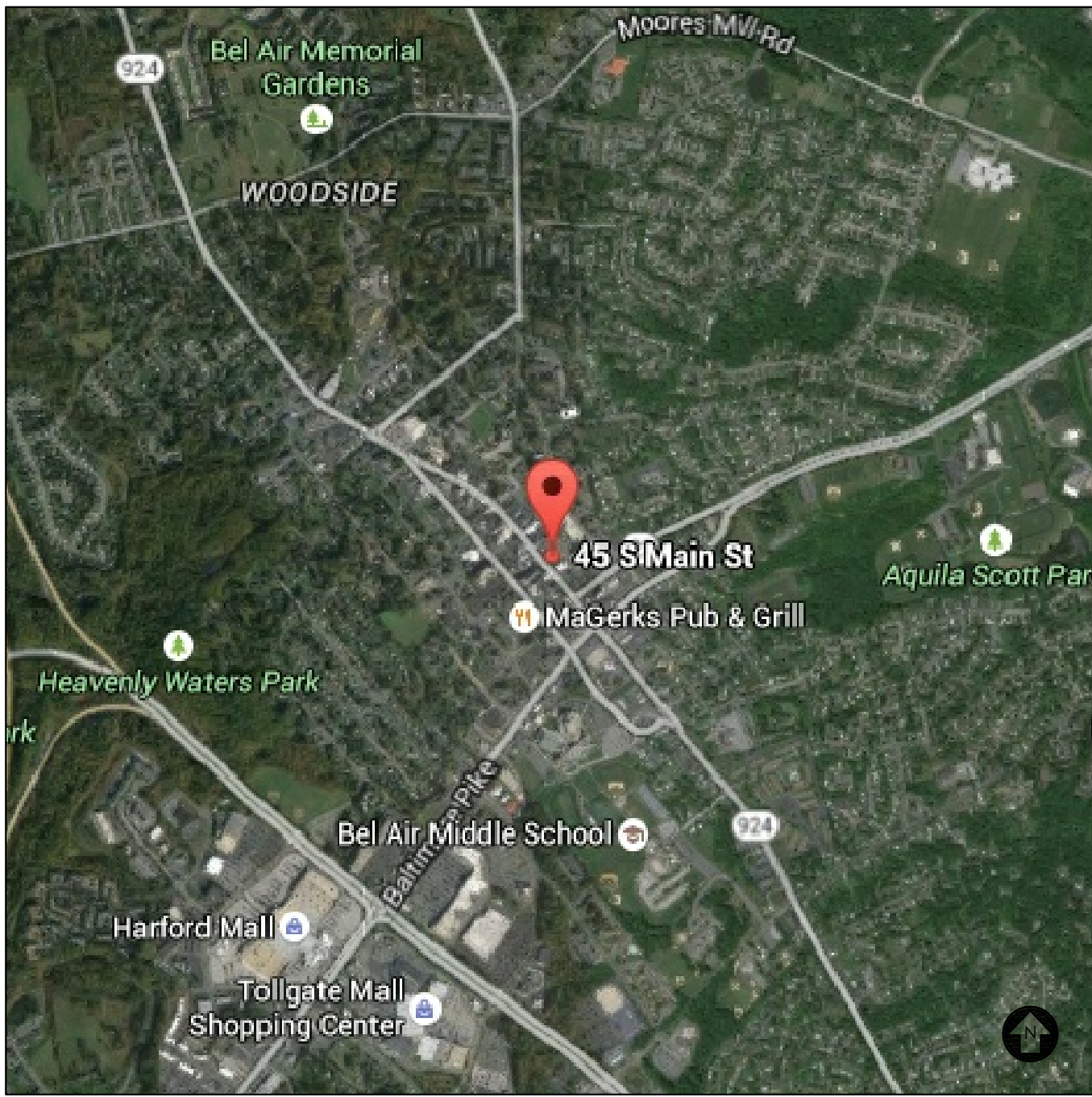
KIBART, INC.  
901 DULANEY VALLEY ROAD, SUITE 301  
TOWSON, MARYLAND 21204  
(410)-494-1111



## LOCATION MAP



## AREA MAP



## DRAWING LIST

GENERAL:	
TS001	TITLE SHEET
MECHANICAL AND PLUMBING:	
MP001	COVER SHEET - MECHANICAL
MP201	DEMOLITION AND NEW WORK - BASEMENT - MECHANICAL
MP601	SCHEMATICS - MECHANICAL
MP701	DETAILS - MECHANICAL
MP801	SCHEDULES - MECHANICAL
ELECTRICAL:	
E001	COVER SHEET - ELECTRICAL
E002	ELECTRICAL SITE PLAN
E101	DEMOLITION + NEW WORK - BASEMENT - ELECTRICAL
E401	ELECTRICAL RISER DIAGRAM
E501	ELECTRICAL DETAILS
E801	HVAC & PANEL SCHEDULES - ELECTRICAL

## GENERAL PHASING NOTES

- BOILERS/MECHANICAL:
- WORK MUST BE DONE AND BOILERS SHALL BE OPERATIONAL PRIOR TO OCTOBER 1ST
  - IF BOILERS ARE REPLACED PRIOR TO NEW ELECTRICAL WORK, TEMPORARILY FEED NEW BOILERS AND PUMPS FROM EXISTING MOTOR CONTROL CENTER.
  - CHILLER PUMP MUST BE COMPLETED AFTER OCTOBER 1ST AND PRIOR TO APRIL 1ST.
- ELECTRICAL:
- INSTALL NEW TRANSFER SWITCH AND MDP.
  - INSTALL NEW GENERATOR AND CONNECT TO TRANSFER SWITCH.
  - MAKE TEMPORARY CONNECTIONS FROM OLD MDP TO NEW MDP.
  - TRANSFER ALL LOADS FROM OLD MDP AND MCC TO NEW MDP. COORDINATE ALL OUTAGES WITH OWNER.
  - UNDER GENERATOR POWER, REMOVE OLD MDP AND INSTALL NEW SERVICE ENTRANCE CIRCUIT BREAKER.
  - EXISTING GENERATOR SHALL REMAIN IN SERVICE UNTIL ALL LOADS ARE TRANSFERRED TO NEW MDP.



PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

LICENSE No. : 17655  
EXPIRATION DATE : 1/11/16

ENGINEER'S SEAL

PROJECT TITLE :	
<b>BOILER, SWITCHGEAR &amp; GENERATOR REPLACEMENT</b>	
45 S MAIN ST BELAIR, MD 21014	
<b>BID DOCUMENTS MARCH 21, 2016</b>	
A/E PROJECT NO. :	13055.03
DRAFTED BY:	JFE
DESIGNED BY:	SPB
CHECKED BY:	SPB
DATE:	06/26/2015

REVISIONS		
NO	DATE	ITEM

SHEET TITLE :

TITLE SHEET

SHEET No.

TS001

KIBART, INC © 2007 FILE: P:\2013\13055.03\DRAWINGS\HARFORD COUNTY SHERIFF'S OFFICE\MECHANICAL\M001 COVER SHEET -- MECHANICAL.DWG PLOTTED: 2015-06-25 BY: DAVID B. PANEX

## GENERAL MECHANICAL NOTES

- ALL TEMPORARY UTILITY OUTAGES OF ANY TYPE SHALL BE COORDINATED WITH THE USER. PROVIDE TWO WEEKS ADVANCE NOTIFICATION PRIOR TO PERFORMING ANY TEMPORARY OUTAGES.
- ALL DUCTWORK SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS.
- COORDINATE MOTORS AND OTHER ELECTRICAL EQUIPMENT FURNISHED UNDER MECHANICAL DIVISIONS WITH ELECTRICAL DIVISION. PROVIDE EQUIPMENT COORDINATION TABLE AS A SHOP DRAWING FOR REVIEW. TABLE SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING INFORMATION:
  - EQUIPMENT POWER REQUIREMENTS INCLUDING AMPS AND VOLTAGES.
  - DISCONNECTING MEANS AND OVER CURRENT PROTECTION REQUIREMENTS.
  - CONTROL REQUIREMENTS.
- COORDINATE THE INSTALLATION OF LIGHTING FIXTURES WITH PIPING, DUCTWORK, AIR DEVICES, SPRINKLERS, AND EQUIPMENT BEING INSTALLED IN THE FACILITY SUCH THAT PIPING, DUCTWORK, AIR DEVICES, AND EQUIPMENT DO NOT BLOCK OR IMPEDE LIGHTING.
- LOCATE ALL EQUIPMENT WHICH MUST BE SERVICED, OPERATED, AND MAINTAINED IN A FULLY ACCESSIBLE POSITION. EQUIPMENT SHALL INCLUDE, BUT NOT BE LIMITED TO VALVES, TRAPS, MOTORS, CONTROLLERS, DRAIN POINTS, ETC., IF REQUIRED FOR ACCESSIBILITY, FURNISH ACCESS DOORS FOR THIS PURPOSE. COORDINATE LOCATION OF ACCESS DOORS WITH ARCHITECT. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ALLOW FOR BETTER ACCESSIBILITY.
- FIRE STOP ALL PIPING AND DUCT PENETRATIONS THRU FIRE WALLS, PARTITIONS, AND FLOORS. PROVIDE LISTED FIRE DAMPERS IN ALL DUCTS THAT PASS THROUGH FIRE BARRIERS AND PARTITIONS. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE RATED WALL, FLOOR, PARTITION AND BARRIER LOCATIONS.
- ALL FIRE DAMPERS SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL AND SHALL BE INSTALLED SO THEY ARE FULLY ACCESSIBLE.
- FOR FLUES AND BREECHINGS, PROVIDE SYSTEM SHOP DRAWINGS TO INCLUDE PROPOSED MATERIALS AND FLUE MANUFACTURER COMPUTER GENERATED CALCULATIONS BASED UPON FIELD MEASUREMENTS OF THE PROPOSED FLUE SYSTEMS FOR ALL GAS AND OIL FIRED EQUIPMENT. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- PREPARE COORDINATION DRAWINGS FOR ALL INTERIOR BUILDING SYSTEMS. DRAWINGS SHALL BE 1/2" = 1' - 0" SCALE. SHOW THE RELATIONSHIP OF COMPONENTS SHOWN ON SEPARATE SHOP DRAWINGS. INDICATE REQUIRED INSTALLATION SEQUENCES. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- PROVIDE WEATHER TIGHT WALL AND ROOF DUCT AND PIPING PENETRATIONS. ALL SEALING MATERIALS TO BE APPROVED BY ARCHITECT.
- EXISTING CONDITIONS (DUCTWORK, PIPING, EQUIPMENT, AND MATERIAL(S) INDICATED ON THE CONTRACT DOCUMENTS ARE NOT WARRANTED TO REPRESENT ALL EXISTING AS-BUILT CONDITIONS. FIELD VERIFY EXACT LOCATIONS OF ALL DUCTWORK, PIPING, EQUIPMENT, AND MATERIALS IN THE FIELD PRIOR TO COMMENCING WITH NEW AND DEMOLITION WORK. EXISTING DUCT, PIPE, AND EQUIPMENT SIZES ARE NOT WARRANTED TO BE COMPLETELY CORRECT. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO ORDERING MATERIALS AND INSTALLING NEW WORK.
- THE DRAWINGS ARE DIAGRAMMATIC AND DO NOT INDICATE EVERY COMPONENT AND/OR ACCESSORY REQUIRED FOR A COMPLETE INSTALLATION. PROVIDE NECESSARY AND REQUIRED COMPONENTS AND ACCESSORIES TO ENSURE THAT THE ENTIRE SYSTEM IS FUNCTIONAL AND IN COMPLIANCE WITH APPLICABLE CODES, ACCEPTED INDUSTRY STANDARDS, AND MANUFACTURER'S INSTALLATION REQUIREMENTS/RECOMMENDATIONS UPON COMPLETION OF WORK.
- ALL DUCTWORK AND PIPING SHALL RUN AS HIGH AS POSSIBLE UNLESS OTHERWISE NOTED.
- ALL OUTSIDE AIR LOUVERS (INTAKE, EXHAUST, OR RELIEF) SHALL BE FITTED WITH 1/2" MESH BIRD SCREENS MOUNTED BEHIND LOUVERS. ALL UNUSED PORTIONS OF OUTSIDE AIR LOUVERS (INTAKE, EXHAUST, OR RELIEF) SHALL BE BLANKED OFF AIRTIGHT WITH 22-GAUGE GALVANIZED SHEET METAL AND 2 INCH RIGID INSULATION. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- INSTALL VALVES AND COIL ASSEMBLIES IN ACCESSIBLE LOCATIONS. PROVIDE ACCESS PANELS PER SPECIFICATIONS.
- CAREFULLY REMOVE PLASTER TYPE CEILINGS AS REQUIRED TO FACILITATE THE INSTALLATION/REMOVAL OF ALL EXISTING/NEW DUCTWORK AND ALL EXISTING/NEW PIPING SYSTEMS AND ASSOCIATED APPURTENANCES. NEW PLASTER TYPE CEILINGS SHALL BE INSTALLED TO REPLACE EXISTING REMOVED PORTIONS WHERE INDICATED AND REQUIRED.

## GENERAL PLUMBING NOTES

- COORDINATE GAS PRESSURE AND SERVICE REQUIREMENTS WITH GAS COMPANY.
- COORDINATE MOTORS AND OTHER ELECTRICAL EQUIPMENT FURNISHED UNDER MECHANICAL DIVISIONS WITH ELECTRICAL DIVISIONS. PROVIDE EQUIPMENT COORDINATION TABLE AS A SHOP DRAWING FOR REVIEW. TABLE SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING INFORMATION:
  - EQUIPMENT POWER REQUIREMENTS INCLUDING AMPS AND VOLTAGES.
  - DISCONNECTING MEANS AND OVER CURRENT PROTECTION REQUIREMENTS.
  - CONTROL REQUIREMENTS.
- UNLESS OTHERWISE INDICATED, PIPING SHALL BE SUPPORTED FROM THE STRUCTURE ABOVE. INTERMEDIATE STRUCTURAL SUPPORTS SHALL BE PROVIDED IN AN APPROVED MANNER AS REQUIRED TO MEET MINIMUM SUPPORT SPACING REQUIRED BY THE SPECIFICATIONS.
- COORDINATE THE INSTALLATION OF LIGHTING FIXTURES WITH PLUMBING PIPING AND EQUIPMENT BEING INSTALLED IN THE FACILITY, SUCH THAT PIPING AND EQUIPMENT DO NOT BLOCK OR IMPEDE LIGHTING.
- PROVIDE PIPE HANGERS, ANCHORS, AND SUPPORTS PER SUPPORT MANUFACTURER'S RECOMMENDATIONS.
- INSTALL PIPING SO THAT ALL VALVES AND ACCESSORIES ARE ACCESSIBLE. PROVIDE ACCESS PANELS PER SPECIFICATIONS.
- INSTALL EQUIPMENT SUCH AS PUMPS, BOILERS, ETC., IN SUCH A MANNER AS TO PROVIDE ADEQUATE SPACE FOR PROPER MAINTENANCE AND EQUIPMENT ACCESS.
- PROVIDE PIPE SLEEVES AT WALL, FLOOR, AND ROOF PENETRATIONS. ALL EXTERIOR ROOF AND WALL PIPING PENETRATIONS SHALL BE MADE WEATHER TIGHT.
- FIRE STOP ALL PLUMBING, SPRINKLER, SANITARY, VENT, CONDENSATE, AND GAS PIPING PENETRATIONS THRU FIRE RATED WALLS, PARTITIONS, AND FLOORS. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE RATED WALL LOCATIONS.

## GENERAL DEMOLITION NOTES

- NOTIFY THE OWNER, IN WRITING, AT LEAST FOURTEEN (14) DAYS IN ADVANCE OF ALL REQUIRED SHUTDOWNS OF WATER, SEWER, FIRE PROTECTION, GAS, ELECTRICAL SERVICE, OR OTHER UTILITIES. UPON WRITTEN RECEIPT OF APPROVAL FROM OWNER, SHUTDOWNS SHALL BE PERFORMED BETWEEN THE HOURS OF 8 AND 5, OR AS DIRECTED OTHERWISE BY THE OWNER AT NO ADDITIONAL CONTRACT COST. AT THE END OF EACH WORK DAY, SHUT DOWN SERVICES SHALL BE RESTORED SO THAT NORMAL USE OF UTILITIES CAN CONTINUE.
- WHEN WORKING IN AND AROUND THE EXISTING BUILDING, CARE SHALL BE EXERCISED WITH REGARDS TO PROTECTION OF EXISTING STRUCTURE AND MECHANICAL AND ELECTRICAL SERVICES WHICH SHALL REMAIN.
- REPAIR, REPLACE, OR RESTORE TO THE SATISFACTION OF THE OWNER, ALL EXISTING WORK DAMAGED IN THE PERFORMANCE OF THE DEMOLITION AND/OR NEW WORK.
- EXISTING CONDITIONS (DUCTWORK, PIPING, EQUIPMENT, AND MATERIAL(S) INDICATED ON THE CONTRACT DOCUMENTS ARE NOT WARRANTED TO REPRESENT ALL EXISTING AS-BUILT CONDITIONS. FIELD VERIFY EXACT LOCATIONS OF ALL DUCTWORK, PIPING, EQUIPMENT, AND MATERIALS IN THE FIELD PRIOR TO COMMENCING WITH NEW AND DEMOLITION WORK. EXISTING DUCT, PIPE, AND EQUIPMENT SIZES ARE NOT WARRANTED TO BE COMPLETELY CORRECT. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO ORDERING MATERIALS AND INSTALLING NEW WORK.
- EXISTING MECHANICAL AND ELECTRICAL WORK INDICATED TO BE REMOVED (PIPES, VALVES, DUCTS, ETC.), SHALL BE REMOVED TO A POINT BELOW THE FINISHED FLOORS OR BEHIND FINISHED WALLS AND CAPPED. TERMINATION POINTS SHALL BE FAR ENOUGH BEHIND FINISHED SURFACES TO ALLOW FOR THE INSTALLATION OF THE NORMAL THICKNESS OF FINISHED MATERIAL.
- EXISTING PIPING NO LONGER REQUIRED TO REMAIN IN SERVICE SHALL BE DISCONNECTED AND REMOVED BACK TO EXISTING ASSOCIATED SERVICE MAINS UNLESS OTHERWISE INDICATED OR NOTED ON THE CONTRACT DRAWINGS. REMOVED EXISTING PIPE HANGERS, PIPE INSULATION, SUPPORTS, VALVES, ETC. EXISTING PIPING INDICATED OR REQUIRED TO REMAIN IN SERVICE OR IN PLACE SHALL BE CAPPED, PLUGGED OR OTHERWISE SEALED. NO EXISTING PIPING SHALL BE LEFT OPEN ENDED.
- EXISTING DUCTWORK INDICATED TO BE DISCONNECTED AND REMOVED SHALL INCLUDE RELOCATED AIR DEVICES, DUCT INSULATION, HANGERS, SUPPORTS, ETC. DUCTWORK SHALL BE CAPPED WITH SIMILAR GAGE SHEET METAL. SECURE CAP(S) WITH SHEET METAL SCREWS AND SEAL WITH DUCT SEALER. NO EXISTING DUCTWORK SHALL BE LEFT UNCAPPED. IF CAPPING INSULATED DUCTS, CAP SHALL BE SIMILARLY INSULATED TO MATCH EXISTING INSULATION MATERIALS AND THICKNESS.
- PATCH TO MATCH ALL NEW AND EXISTING OPENINGS IN WALLS, CEILINGS, AND FLOOR SURFACES DAMAGED OR CREATED BY DEMOLITION WORK. PATCHING SHALL MATCH EXISTING ADJACENT SURFACES AS TO THICKNESS, TEXTURES, MATERIALS, AND COLOR. ALL PATCHING SHALL BE PERFORMED TO THE SATISFACTION OF THE ARCHITECT AND AT NO ADDITIONAL CONTRACT COST.
- ALL DEMOLISHED EQUIPMENT SHALL BE OFFERED TO THE OWNER PRIOR TO DISPOSAL. EQUIPMENT RETAINED BY THE OWNER SHALL BE STORED WHERE DIRECTED BY THE OWNER. ANY EQUIPMENT THE OWNER DOES NOT WISH TO RETAIN SHALL BE DISPOSED OF, OFF SITE, BY THE CONTRACTOR.

## GENERAL FIRE PROTECTION NOTES

- THE EXISTING BUILDING IS SPRINKLERED WITH A WET PIPE SPRINKLER SYSTEM. THE EXISTING SPRINKLER SYSTEM SERVING THE EXISTING OCCUPIED BUILDING AREAS SHALL REMAIN. THE REMAINDER OF THE EXISTING WET PIPE SPRINKLER SYSTEM LOCATED IN THIS PROJECTS LIMITS SHALL BE MODIFIED/EXTENDED/REPLACED ONLY AS REQUIRED TO ACCOMMODATE NEW OR RENOVATED PORTIONS OF THE BUILDING. SIZE ALL FIRE PROTECTION PIPING IN ACCORDANCE WITH REQUIREMENTS OF THE NATIONAL FIRE PROTECTION ASSOCIATION. SPRINKLER HEAD FLOW COEFFICIENTS SHALL MATCH EXISTING.
- THE ENTIRE BUILDING SHALL CONTINUE TO BE COMPLETELY 100% SPRINKLERED IN ACCORDANCE WITH NFPA.
- RELOCATE EXISTING SPRINKLER HEADS, PROVIDE NEW SPRINKLER HEADS AND PROVIDE NEW PIPING EXTENSIONS TO ACCOMMODATE ALL LIGHTING MODIFICATIONS AND DUCTWORK ALTERATIONS IN RENOVATED BUILDING AREAS. AREAS REQUIRING SPRINKLERS SHALL BE DESIGNED FOR OCCUPANCY AS REQUIRED BY APPLICABLE CODES.
- CONCEAL FIRE PROTECTION PIPING IN FINISHED SPACES UNLESS INDICATED OTHERWISE.
- EXISTING SYSTEM DRAINS AND INSPECTOR TEST PORTS SHALL REMAIN AS LOCATED. EXCEPT AS OTHERWISE REQUIRED TO BE RELOCATED DUE TO BUILDING RENOVATIONS, EQUIPMENT INSTALLATIONS, UTILITY INSTALLATIONS, ETC. NOTE: IF NEW SYSTEM DRAINS AND INSPECTOR TEST PORTS ARE REQUIRED THEY SHALL NOT BE LOCATED IN FINISHED SPACES.
- REFER TO SPECIFICATIONS FOR ADDITIONAL FIRE PROTECTION SYSTEM INFORMATION.
- CONTINUOUSLY MAINTAIN ALL BUILDING EXITS AND BUILDING FIRE PROTECTION DEVICES, SUCH AS FIRE SPRINKLER SYSTEMS, FIRE EXTINGUISHERS, ETC.
- THE SPRINKLER SYSTEM SHALL BE DESIGNED AND COORDINATED WITH DUCTWORK, PIPING, LIGHTING, EQUIPMENT, AND ARCHITECTURAL REFLECTED CEILING PLANS, PRIOR TO FABRICATION AND INSTALLATION.
- ANY SHUTDOWN OR DE-ACTIVATION OF THE EXISTING FIRE SPRINKLER SYSTEM SHALL BE COORDINATED AND APPROVED BY THE OWNER.
- FIRE STOP ALL SPRINKLER PIPING PENETRATIONS THRU FIRE RATED WALLS, PARTITIONS, AND FLOORS. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE RATED WALL AND FLOOR LOCATIONS.

## MECHANICAL/ PLUMBING LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
----	RX.	REMOVE EXISTING
----	EX.	EXISTING
----	CW	COLD WATER
----	HW	HOT WATER (110°F OR 140°F)
----	HWR	HOT WATER RECIRCULATING (110°F OR 140°F)
II — , —	CO	CLEAN OUT: LINE, FLUSH
---- CHS	CHS	CHILLED WATER SUPPLY
----- CHR -----	CHR	CHILLED WATER RETURN
----- DTS -----	DTS	DUAL TEMPERATURE SUPPLY
----- DTR -----	DTR	DUAL TEMPERATURE RETURN
----- HS -----	HS	HEATING WATER SUPPLY
----- HR -----	HR	HEATING WATER RETURN
---- FOS	FOS	FUEL OIL SUPPLY
----- FOR -----	FOR	FUEL OIL RETURN
---- FOV	FOV	FUEL OIL VENT
— — — — —	DP, DN	ELBOW DOWN OR DROP
— — — — —	UP	ELBOW UP OR RISE
— — — — —		PIPE CONTINUES
— — — — —		FLOW IN DIRECTION OF ARROW
— — — — —		RISE OR DROP IN PIPE
— — — — —		SIDE PIPE CONNECTION
— — — — —		BOTTOM PIPE CONNECTION
— — — — —		TOP PIPE CONNECTION
— — — — —		CAPPED OUTLET
— — — — —		CAPPED PIPE
— — — — —		BALL VALVE
— — — — —		MULTI-PURPOSE VALVE
— — — — —		CHECK VALVE
— — — — —		COMBINATION BALANCING & SHUT-OFF VALVE
— — — — —		T & P
— — — — —	GC	GAS COCK
10x8		RECTANGULAR DUCT
10"		ROUND DUCT
11111		FLEXIBLE CONNECTION DUCTWORK
— — — — —	DP	DRIP LEG
— — — — —	FD	FLOOR DRAIN
— — — — —		BUTTERFLY VALVE
— — — — —	ACV	THREE-WAY CONTROL VALVE (ATC)
— — — — —	ACV	TWO-WAY CONTROL VALVE (ATC)
— — — — —	RV	RELIEF VALVE (TYPE AS NOTED)
— — — — —		STRAINER (Y OR BASKET) W/ HOSE END DRAIN VALVE
— — — — —		PRESSURE GAUGE W/ NEEDLE VALVE
— — — — —		THERMOMETER
— — — — —		THERMAL WELL
— — — — —	AAV	AUTOMATIC AIR VENT
— — — — —	MAV	MANUAL AIR VENT
— — — — —		SOLENOID VALVE
— — — — —	P/T	PRESSURE AND TEMPERATURE PLUG
— — — — —	FC	FLEXIBLE CONNECTION - PIPING
— — — — —		ATC FLOW SWITCH
— — — — —		TEMPERATURE SENSOR WITH IMMERSION WELL
— — — — —		CONNECT TO EXISTING AT THIS POINT
— — — — —		REMOVE EXISTING TO THIS POINT
— — — — —	DIA.	DIAMETER
— — — — —	NO.	NUMBER
— — — — —	CFM	CUBIC FEET PER MINUTE
— — — — —		DRAWING NOTE REFERENCE SYMBOL
— — — — —		REVISION REFERENCE SYMBOL

## MECHANICAL/ PLUMBING LEGEND

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
ADJ.	ADJUSTABLE	GPM	GALLONS PER MINUTE
ACV	AUTOMATIC CONTROL VALVE	HP	HORSE POWER
ALT.	ALTERNATE	LF	LINEAR FEET
AFF	ABOVE FINISHED FLOOR	LBS/HR	POUNDS PER HOUR
AFG	ABOVE FINISHED GRADE	LAT	LEAVING AIR TEMPERATURE
APD	AIR PRESSURE DROP	LWT	LEAVING WATER TEMPERATURE
AHU	AIR HANDLING UNIT	MFR.	MANUFACTURER
BFF	BELOW FINISHED FLOOR	MBH	ONE THOUSAND BTU PER HOUR
BFG	BELOW FINISHED GRADE	MAX.	MAXIMUM
BLDG.	BUILDING	MIN.	MINIMUM
CONT.	CONTINUATION	NO	NORMALLY OPENED
CU	CONDENSING UNIT	NC	NORMALLY CLOSED
CONN.	CONNECTION	NIC	NOT IN CONTRACT
CFH	CUBIC FEET PER HOUR	NTS	NOT TO SCALE
CLG.	CEILING	PD	PUMP DISCHARGE
DB	DRY BULB	PSIG	POUNDS PER SQUARE INCH GAUGE
DWG.	DRAWING	RM.	ROOM
DN.	DOWN	REQ'D	REQUIRED
ESP	EXTERNAL STATIC PRESSURE	RX.	REMOVE EXISTING
EAT	ENTERING AIR TEMPERATURE	S/S	STAINLESS STEEL
EWT	ENTERING WATER TEMPERATURE	SF	SQUARE FEET
EMD	END OF MAIN DRIP	SPEC.	SPECIFICATIONS
EX.	EXISTING	TYP.	TYPICAL
ET	EXPANSION TANK	V/ /HZ	VOLTS/PHASE/HERTZ
ELEV.	ELEVATION	VFD	VARIABLE FREQUENCY DRIVE
FFE	FINISHED FLOOR ELEVATION	W/	WITH
FLR.	FLOOR	WPD	WATER PRESSURE DROP
GPH	GALLONS PER HOUR	WB	WET BULB

## GENERAL PHASING NOTES

### BOILERS/MECHANICAL:

- WORK MUST BE DONE AND BOILERS SHALL BE OPERATIONAL PRIOR TO OCTOBER 1ST
- IF BOILERS ARE REPLACED PRIOR TO NEW ELECTRICAL WORK, TEMPORARILY FEED NEW BOILERS AND PUMPS FROM EXISTING MOTOR CONTROL CENTER.
- CHILLER PUMP MUST BE COMPLETED AFTER OCTOBER 1ST AND PRIOR TO APRIL 1ST.

### ELECTRICAL:

- INSTALL NEW TRANSFER SWITCH AND MDP.
- INSTALL NEW GENERATOR AND CONNECT TO TRANSFER SWITCH.
- MAKE TEMPORARY CONNECTIONS FROM OLD MDP TO NEW MDP.
- TRANSFER ALL LOADS FROM OLD MDP AND MCC TO NEW MDP. COORDINATE ALL OUTAGES WITH OWNER.
- UNDER GENERATOR POWER, REMOVE OLD MDP AND INSTALL NEW SERVICE ENTRANCE CIRCUIT BREAKER.
- EXISTING GENERATOR SHALL REMAIN IN SERVICE UNTIL ALL LOADS ARE TRANSFERRED TO NEW MDP.

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

LICENSE No. : 17655  
EXPIRATION DATE : 1/11/16

ENGINEER'S SEAL

PROJECT TITLE :

## BOILER, SWITCHGEAR & GENERATOR REPLACEMENT

45 S MAIN ST  
BELAIR, MD 21014

**BID DOCUMENTS  
MARCH 21, 2016**

A/E PROJECT NO. :	13055.03
DRAFTED BY:	JFE
DESIGNED BY:	SPB
CHECKED BY:	SPB
DATE:	06/26/2015

### REVISIONS

NO	DATE	ITEM

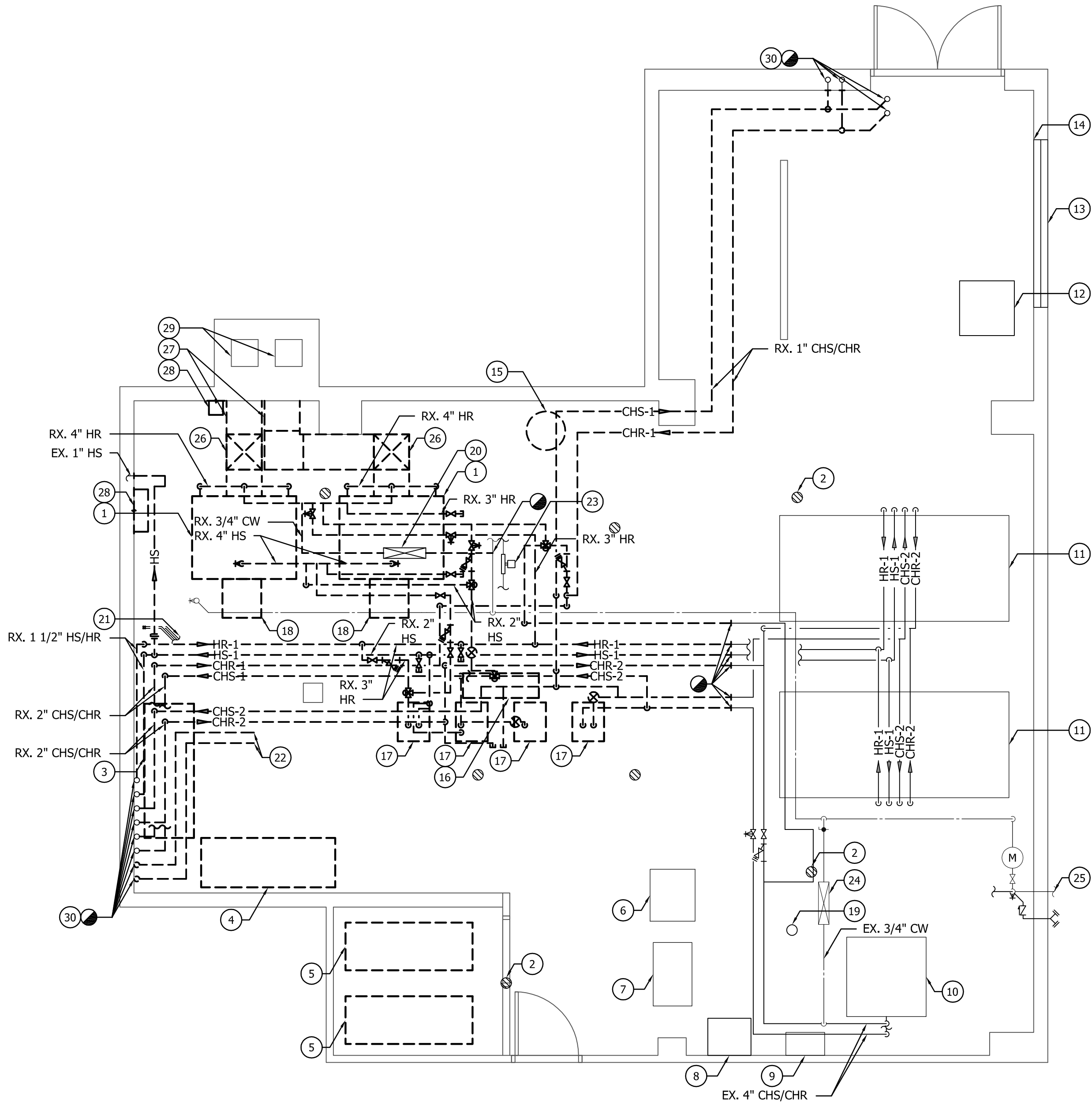
SHEET TITLE :

## COVER SHEET - MECHANICAL

SHEET No.

M001

KIBART, INC. © 2007 FILE: P:\2013\13055.03\DRAWINGS\HARFORD COUNTY SHERIFF'S OFFICE\MECHANICAL\13055.03-M201 NEW WORK - BASEMENT - MECHANICAL.DWG PLOTTED: 2015-06-25 BY: DAVID B. PANEK



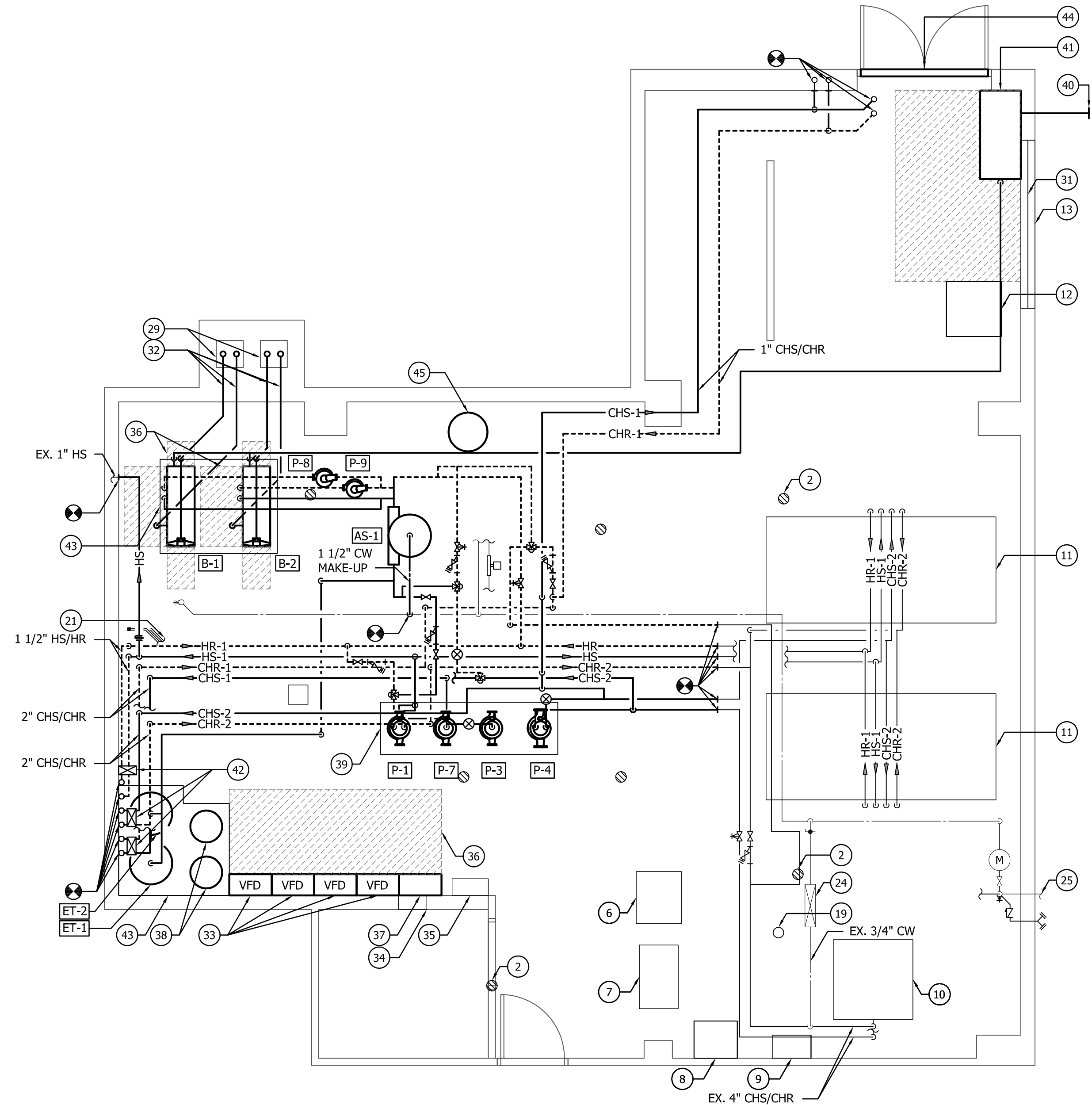
**DEMOLITION - BASEMENT - MECHANICAL**  
SCALE: 1/4" = 1' - 0"

**GENERAL NOTES**

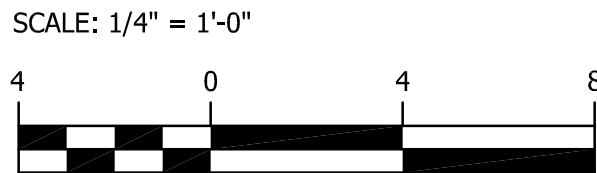
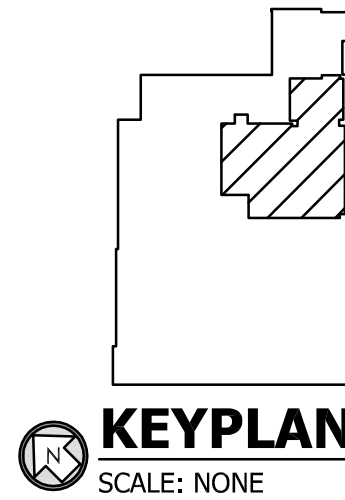
- CEILING IS PLASTER. COORDINATE ALL PIPING LOCATIONS SO ALL PIPE HANGERS AND PIPE SUPPORTS ARE CONNECTED TO BUILDING STRUCTURE.
- PIPE SIZES SHALL BE CONFIRMED BY CONTRACTOR. REFER TO AS BUILT DRAWINGS FOR EXISTING PIPE SIZES.
- EVACUATE FUEL OIL FROM DEMOLISHED FUEL OIL TANKS/PIPING IN ACCORDANCE WITH MDE AND EPA REGULATIONS.
- REFER TO ASBESTOS REPORT AND SPECIFICATIONS AND PROVIDE ASBESTOS ABATEMENT PER APPLICABLE CODES.

**DRAWING NOTES**

- REMOVE EXISTING BOILER AND ALL ASSOCIATED APPURTENANCES
- EXISTING FLOOR DRAIN (TYPICAL)
- REMOVE EXISTING EXPANSION TANK AND ASSOCIATED PIPING AND SUPPORTS.
- REMOVE TWO STACKED EXISTING EXPANSION TANKS AND ASSOCIATED PIPING AND SUPPORTS.
- REMOVE EXISTING FUEL OIL TANK, FUEL OIL PIPING, AND ALL ASSOCIATED APPURTENANCES
- EXISTING PNEUMATIC CONTROL PANEL
- EXISTING AIR COMPRESSOR
- EXISTING SINK
- EXISTING ATC AIR DRYER
- EXISTING CHILLER
- EXISTING AIR HANDLER
- EXISTING SUMP PIT
- EXISTING COMBUSTION AIR LOUVER
- RELOCATE EXISTING ACUATOR. REMOVE EXISTING DAMPER, AND ALL ASSOCIATED APPURTENANCES.
- RELOCATE EXISTING WATER HEATER AND ALL ASSOCIATED APPURTENANCES TO ACCOMMODATE ELEC EQUIPMENT. REFER TO NEW WORK PLAN FOR NEW LOCATION.
- REMOVE EXISTING BOILER CONTROL PANEL AND ALL ASSOCIATED APPURTENANCES.
- REMOVE EXISTING PUMP, ALL ASSOCIATED APPURTENANCES, AND EXISTING HOUSEKEEPING PAD.
- REMOVE EXISTING FUEL OIL PUMP, FUEL OIL PIPING, AND ALL ASSOCIATED APPURTENANCES
- EXISTING CLEANOUT
- REMOVE EXISTING COLD WATER MAKE-UP VALVING ASSEMBLY
- EXISTING ELECTRICAL CONDUIT AND REFRIGERANT LIQUID/SUCTION BELOW HS/HR PIPING
- EXISTING HOT WATER RECIRCULATING PUMP
- EXISTING COLD WATER MAKE-UP VALVING ASSEMBLY
- INCOMING COLD WATER/FIRE
- REMOVE EXISTING INDUCED DRAFT FAN AND ALL ELECTRICAL CONNECTIONS
- REMOVE EXISTING 14x14 BOILER FLUE
- EXISTING ABANDONED DUCT
- INSPECT CHIMNEY FOR STRUCTURAL INTEGRITY AND REPORT ANY DEFICIENCIES TO OWNER/ENGINEER. CLEAN CHIMNEY OF ALL SOOT AND DEBRIS
- DEMOLISH PIPING TO BOUNDARY OF MECHANICAL ROOM
- EXISTING COMBUSTION AIR LOUVER. REFER TO SPECIFICATIONS FOR MORE INFORMATION
- 6" BOILER VENT AND 6" BOILER INTAKE UP TO ROOF THROUGH CHIMNEY. PROVIDE VERTICAL SUPPORTS EVERY 20" AS PER MANUFACTURER'S RECOMMENDATIONS.
- VFD'S SERVING INLINE PUMPS. PROVIDE DRIP HOOD IF LOCATED BELOW EX. DUCTWORK/PIPING. COORDINATE FINAL LOCATION WITH MECHANICAL AND ELECTRICAL INSPECTORS.
- EXISTING 16"x21" HOLE IN WALL. PATCH TO MATCH EXISTING CONDITIONS.
- EXISTING PANEL
- REQUIRED EQUIPMENT CLEARANCE (TYPICAL)
- BAS CONTROL PANEL
- 5 GALLON CHEMICAL BYPASS FEEDERS
- PUMP SUPPORT SYSTEM. MOUNT PUMPS AT 50" ABOVE FINISHED FLOOR. REFER TO DETAIL FOR MORE INFORMATION.
- INCOMING GAS SERVICE.
- NATURAL GAS METER BY SERVICE PROVIDER. PROVIDE 2" RELIEF PIPING. ROUTE 2" RELIEF PIPING THROUGH 3" PIPE SLEEVE TO EXTERIOR. REFER TO RISER DIAGRAM ON M801 FOR MORE INFORMATION.
- LOCATION OF BYPASS AND DPS (TYPICAL).
- CONCRETE HOUSEKEEPING PAD, REFER TO DETAIL FOR MORE INFORMATION (TYPICAL).
- PROVIDE AND INSTALL TEMPORARY 2'X6' LOUVERED DOOR AND MOTOR OPERATED DAMPER. UTILIZE EXISTING ACTUATOR.
- RELOCATED WATER HEATER TO ACCOMMODATE ELEC EQUIPMENT. PROVIDE NECESSARY PIPING AND VALVING FOR NEW LOCATION. ALL NEW DOMESTIC WATER PIPING SHALL BE TYPE L COPPER. ALL NEW DOMESTIC WATER INSULATION SHALL BE MINERAL FIBER OF 1 1/2" THICKNESS. PROVIDE VAPOR BARRIER ON DOMESTIC COLD WATER PIPING.



**NEW WORK - BASEMENT - MECHANICAL**  
SCALE: 1/4" = 1' - 0"



CONSULTING ENGINEERS

**KIBART**  
CONSULTING ENGINEERS

901 Dulaney Valley Road, Suite 301  
Towson, MD 21204

Phone 410-494-1111  
Fax 410-494-1112

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

LICENSE No. : 17655  
EXPIRATION DATE : 1/11/16

ENGINEER'S SEAL

PROJECT TITLE :

**BOILER, SWITCHGEAR & GENERATOR REPLACEMENT**

45 S MAIN ST  
BELAIR, MD 21014

**BID DOCUMENTS**  
**MARCH 21, 2016**

A/E PROJECT NO. : 13055.03

DRAFTED BY: JFE

DESIGNED BY: SPB

CHECKED BY: SPB

DATE: 06/26/2015

REVISIONS		
NO	DATE	ITEM

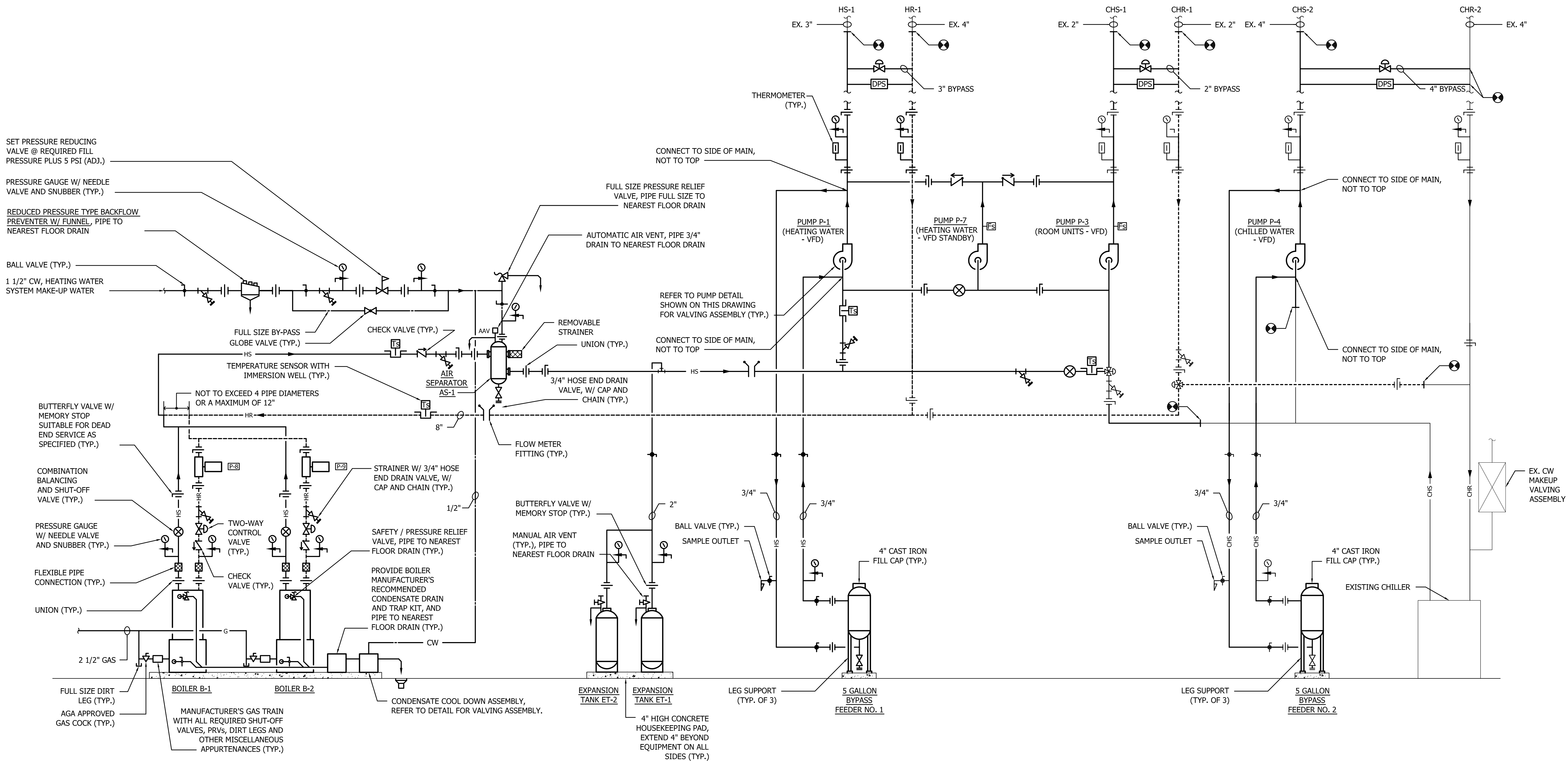
SHEET TITLE :

**DEMOLITION AND NEW WORK - BASEMENT - MECHANICAL**

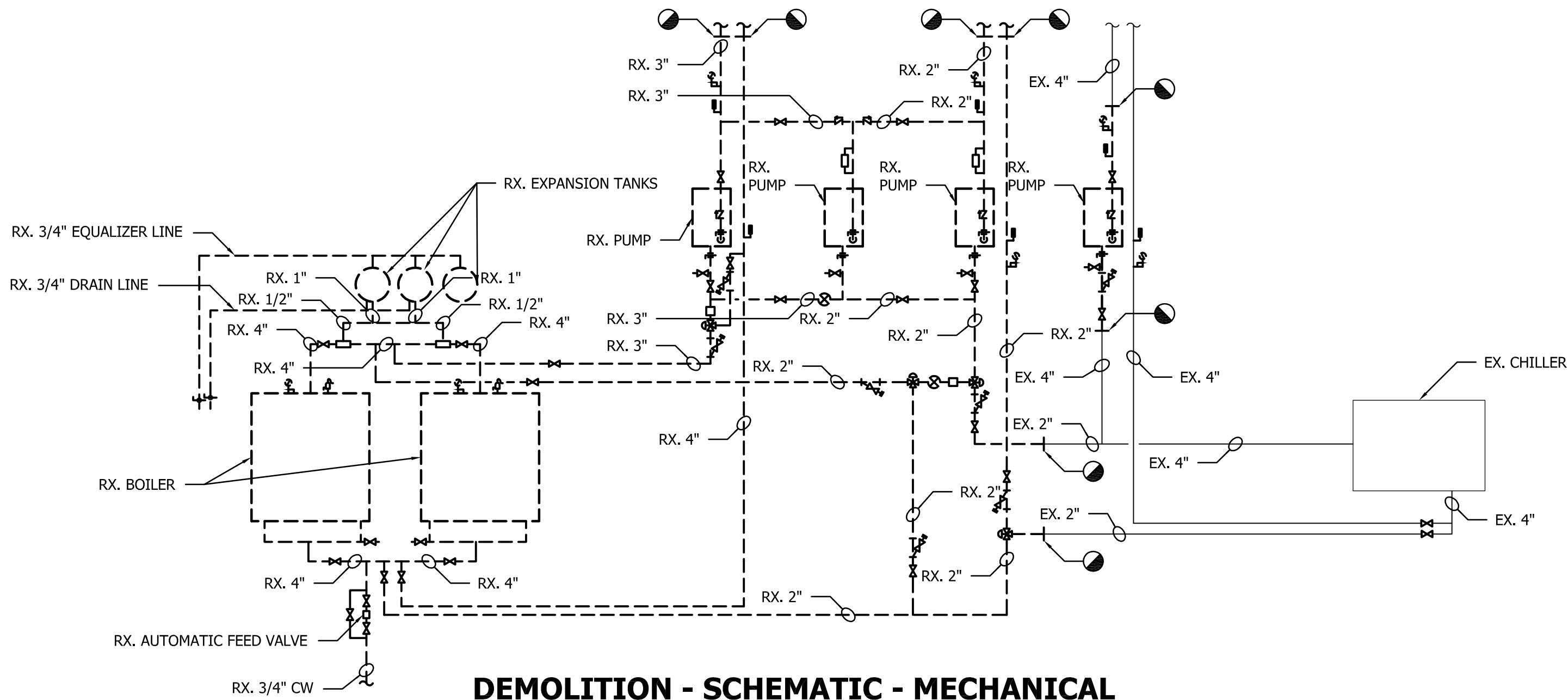
SHEET No.

**M201**

KIBART, INC. © 2007 FILE: P:\2013\13055.03\DRAWINGS\HARFORD COUNTY SHERIFF'S OFFICE\MECHANICAL\M601 SCHEMATICS - MECHANICAL.DWG PLOTTED: 2015-06-25 BY: DAVID B. PANEX



NEW WORK - SCHEMATIC - MECHANICAL  
SCALE: NONE



DEMOLITION - SCHEMATIC - MECHANICAL  
SCALE: NONE

CONSULTING ENGINEERS

**KIBART**  
CONSULTING ENGINEERS

901 Dulaney Valley Road, Suite 301  
Towson, MD 21204

Phone 410-494-1111  
Fax 410-494-1112

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

LICENSE No. : 17655  
EXPIRATION DATE : 1/11/16

ENGINEER'S SEAL

PROJECT TITLE :

**BOILER, SWITCHGEAR & GENERATOR REPLACEMENT**

45 S MAIN ST  
BELAIR, MD 21014

**BID DOCUMENTS  
MARCH 21, 2016**

A/E PROJECT NO. : 13055.03

DRAFTED BY: JFE

DESIGNED BY: SPB

CHECKED BY: SPB

DATE: 06/26/2015

REVISIONS		
NO	DATE	ITEM

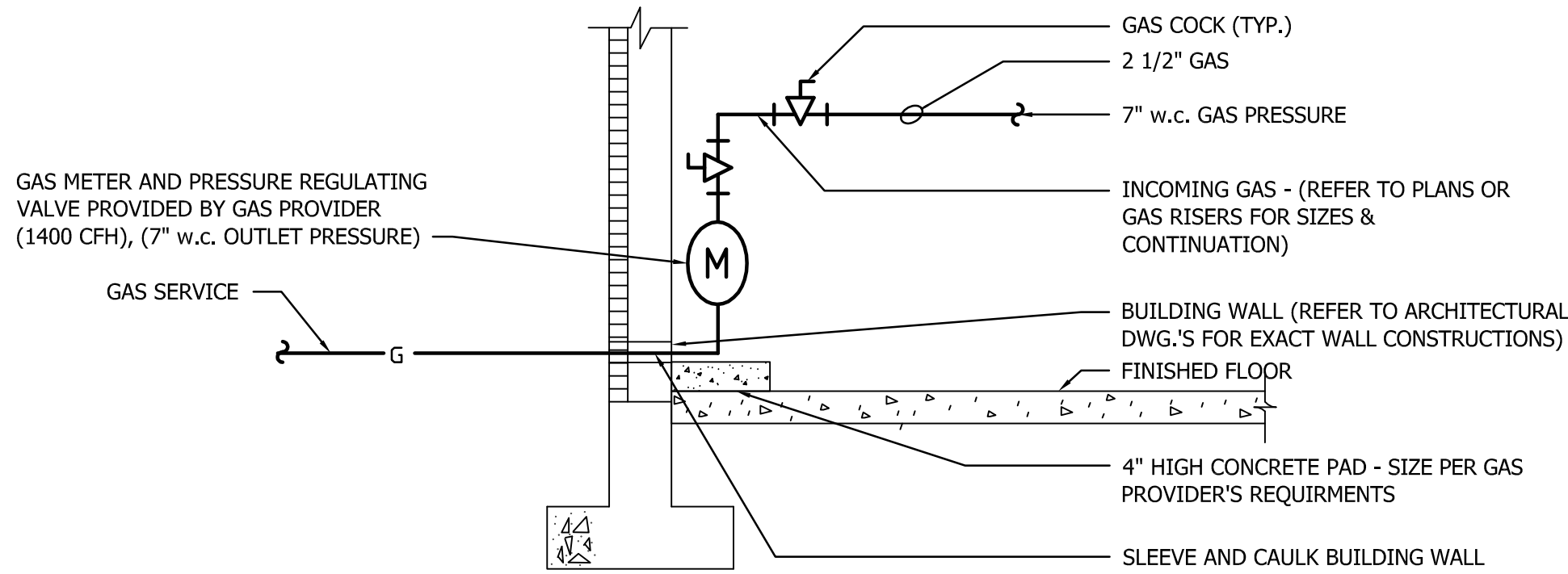
SHEET TITLE :

**SCHEMATICS - MECHANICAL**

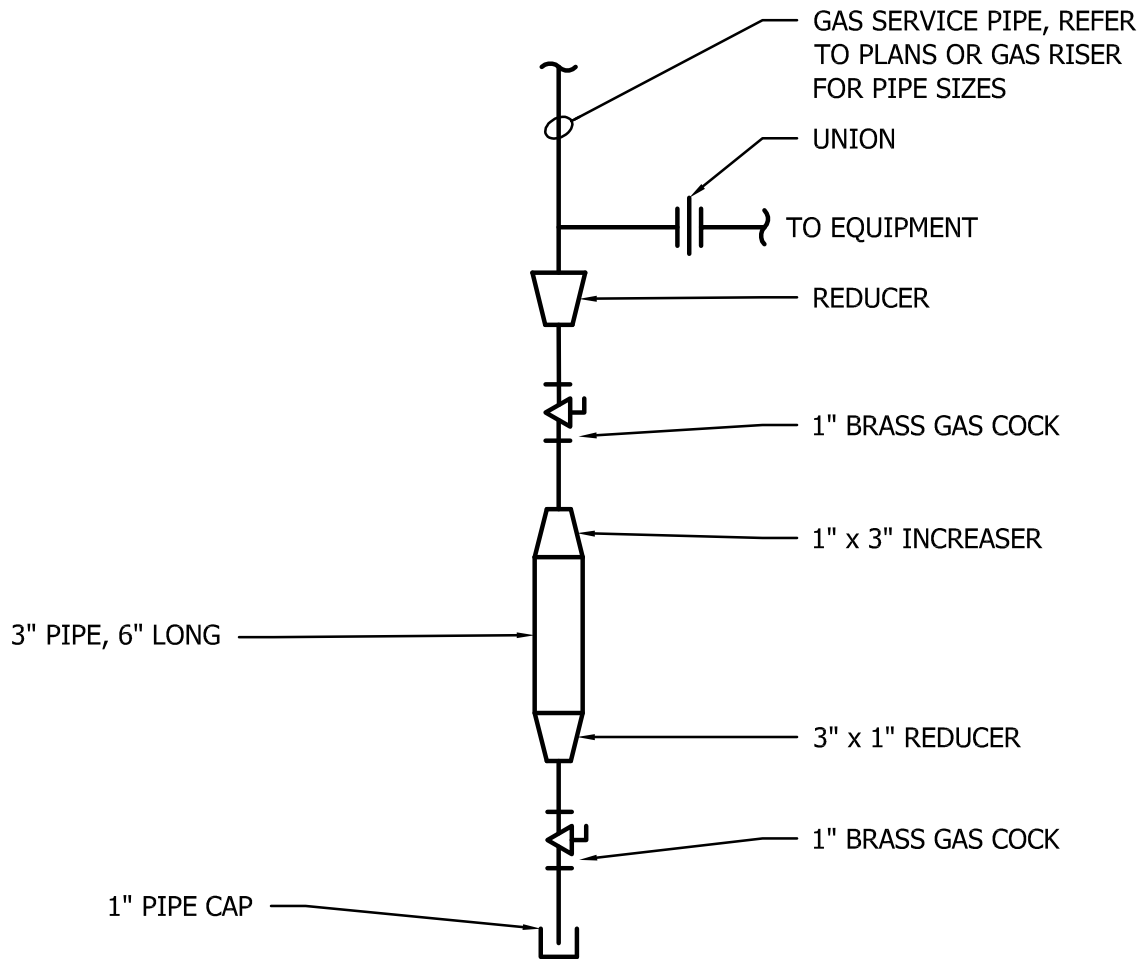
SHEET No.

**M601**

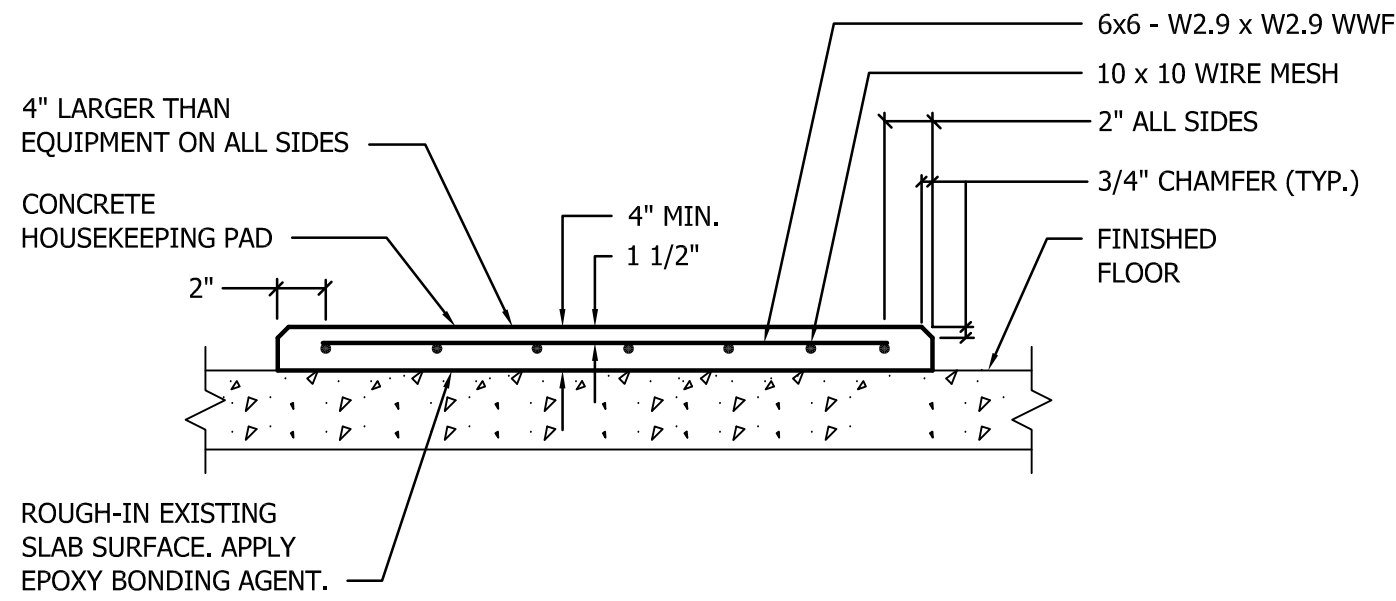
KIBART, INC. © 2007 FILE: P:\2013\13055.03\DRAWINGS\HARFORD COUNTY SHERIFF'S OFFICE\MECHANICAL\13055.03-M701 DETAILS - MECHANICAL.DWG PLOTTED: 2015-06-25 BY: DAVID B. PANEK



**DETAIL - TYPICAL GAS ENTRY VALVING**  
SCALE: NONE

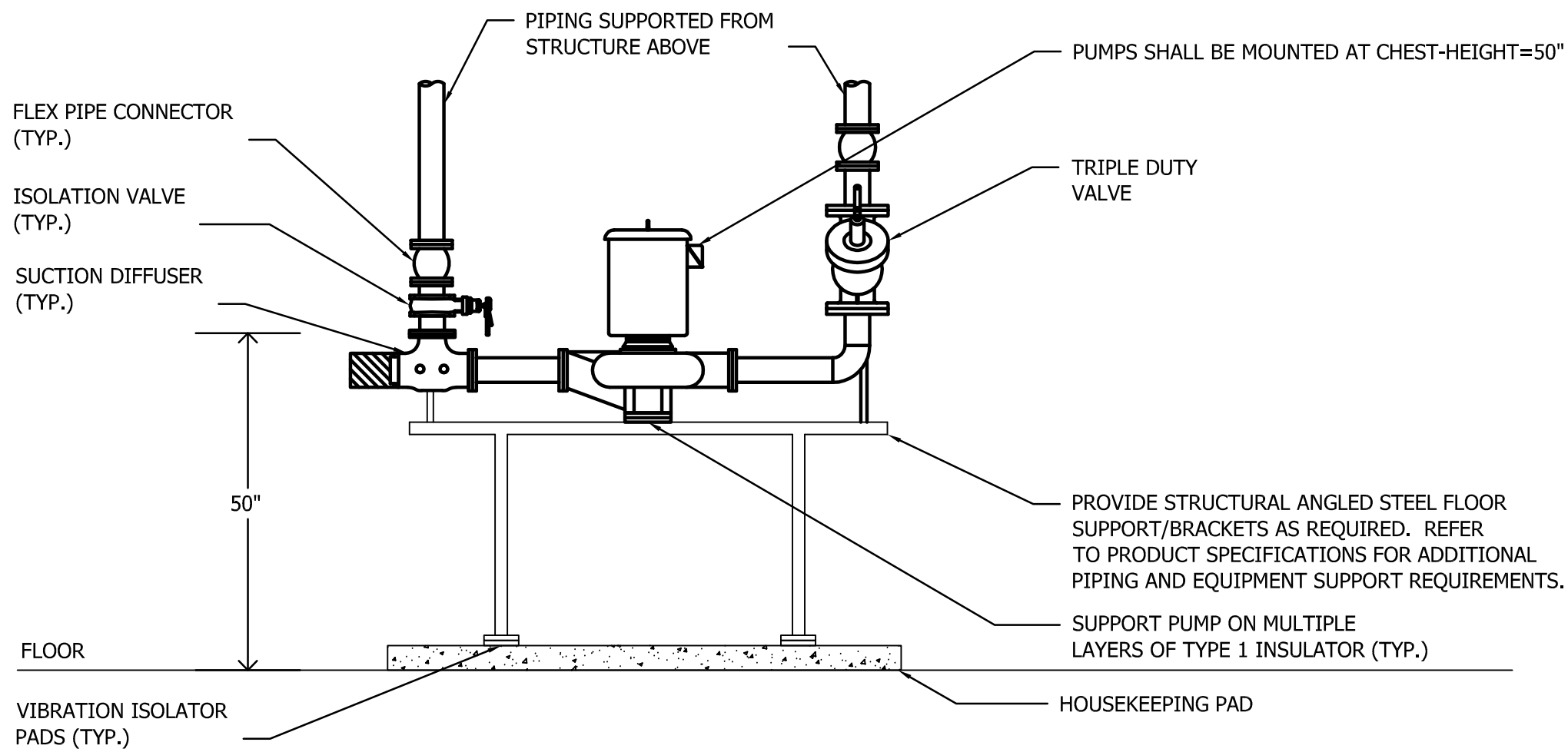


**DETAIL - TYPICAL NATURAL GAS DIRT LEG**  
SCALE: NONE

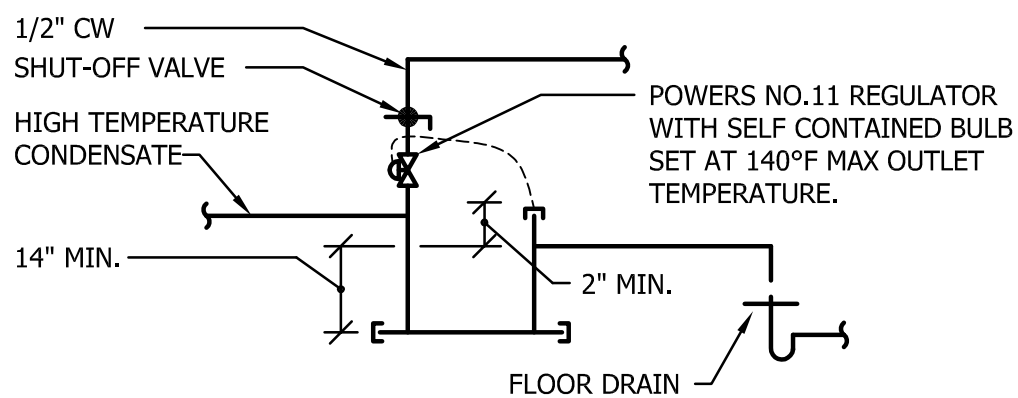


- NOTES:
1. PROVIDE REBAR IN SIZES, QUANTITIES, AND CONFIGURATIONS AS RECOMMENDED BY THE STRUCTURAL ENGINEER.

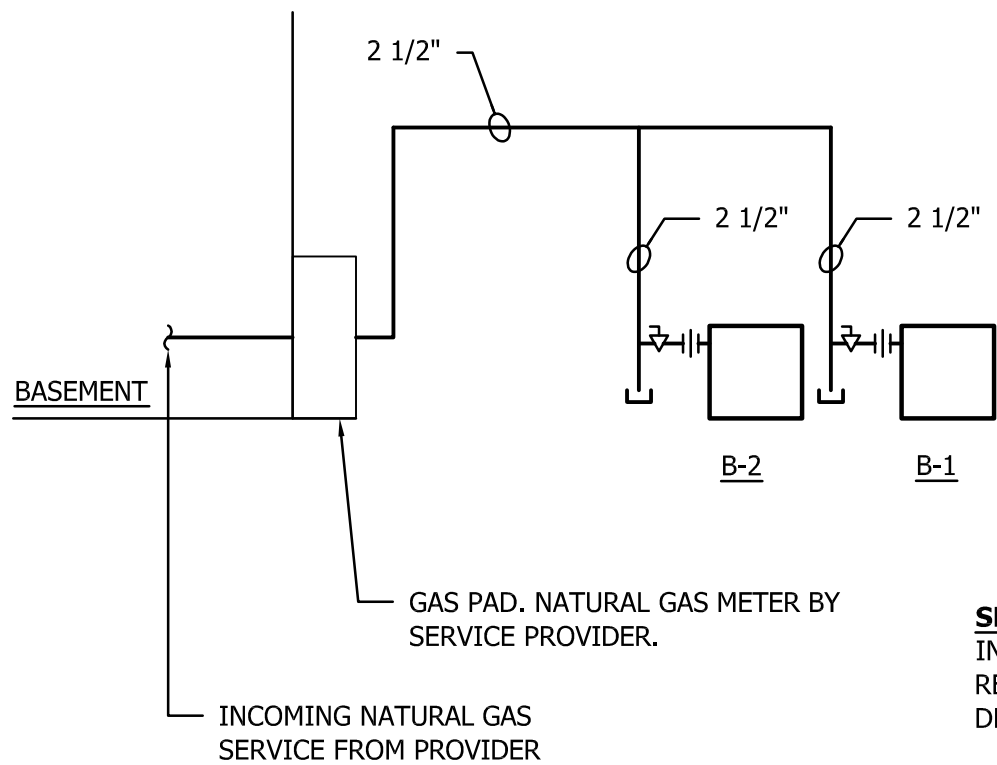
**DETAIL - TYPICAL CONCRETE HOUSEKEEPING PAD ON EXISTING FLOOR SLAB**  
SCALE: NONE



**DETAIL - TYPICAL INLINE PUMPS INSTALLATION AND SUPPORT**  
SCALE: NONE

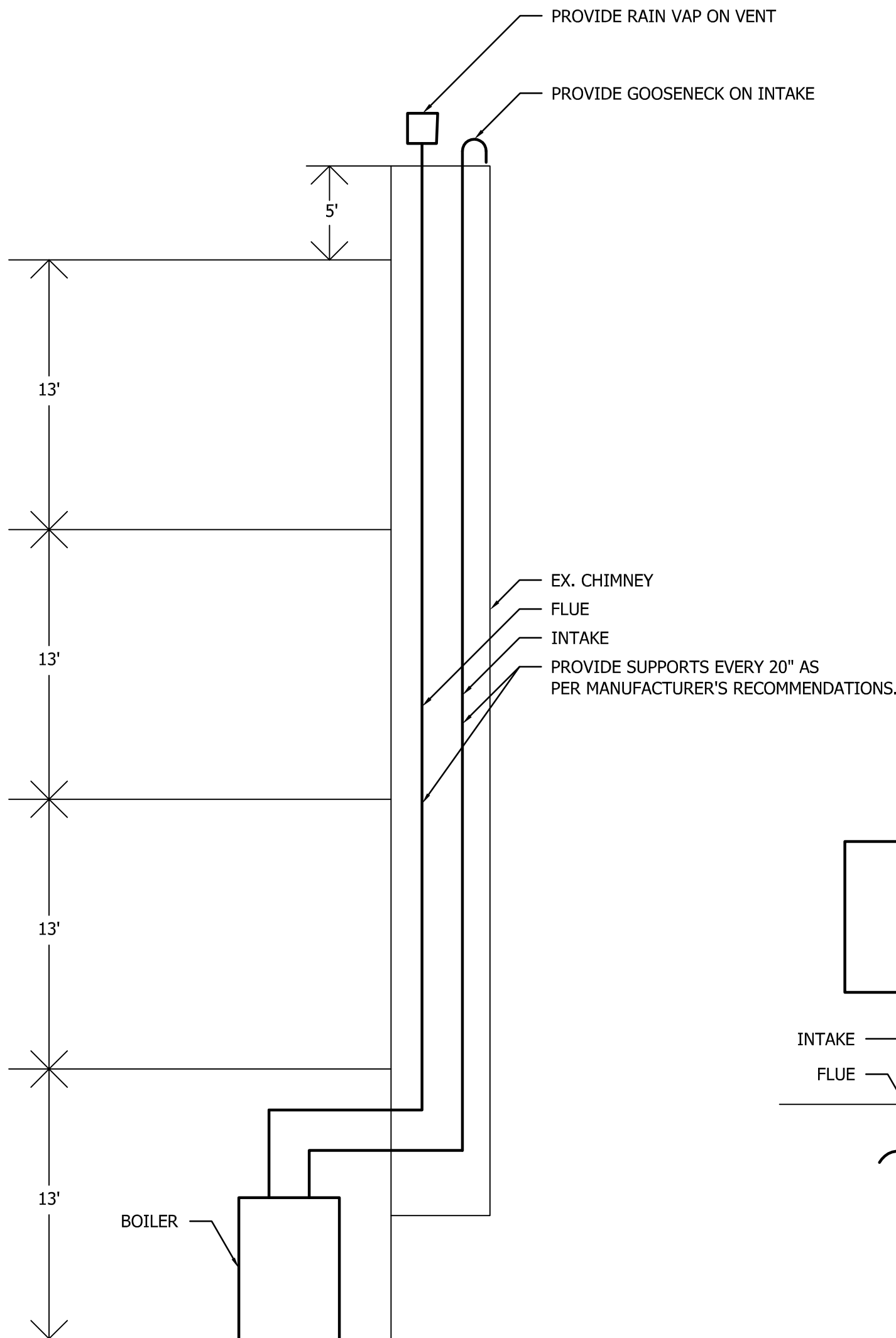


**DETAIL - CONDENSATE COOL DOWN ASSEMBLY**  
SCALE: NONE

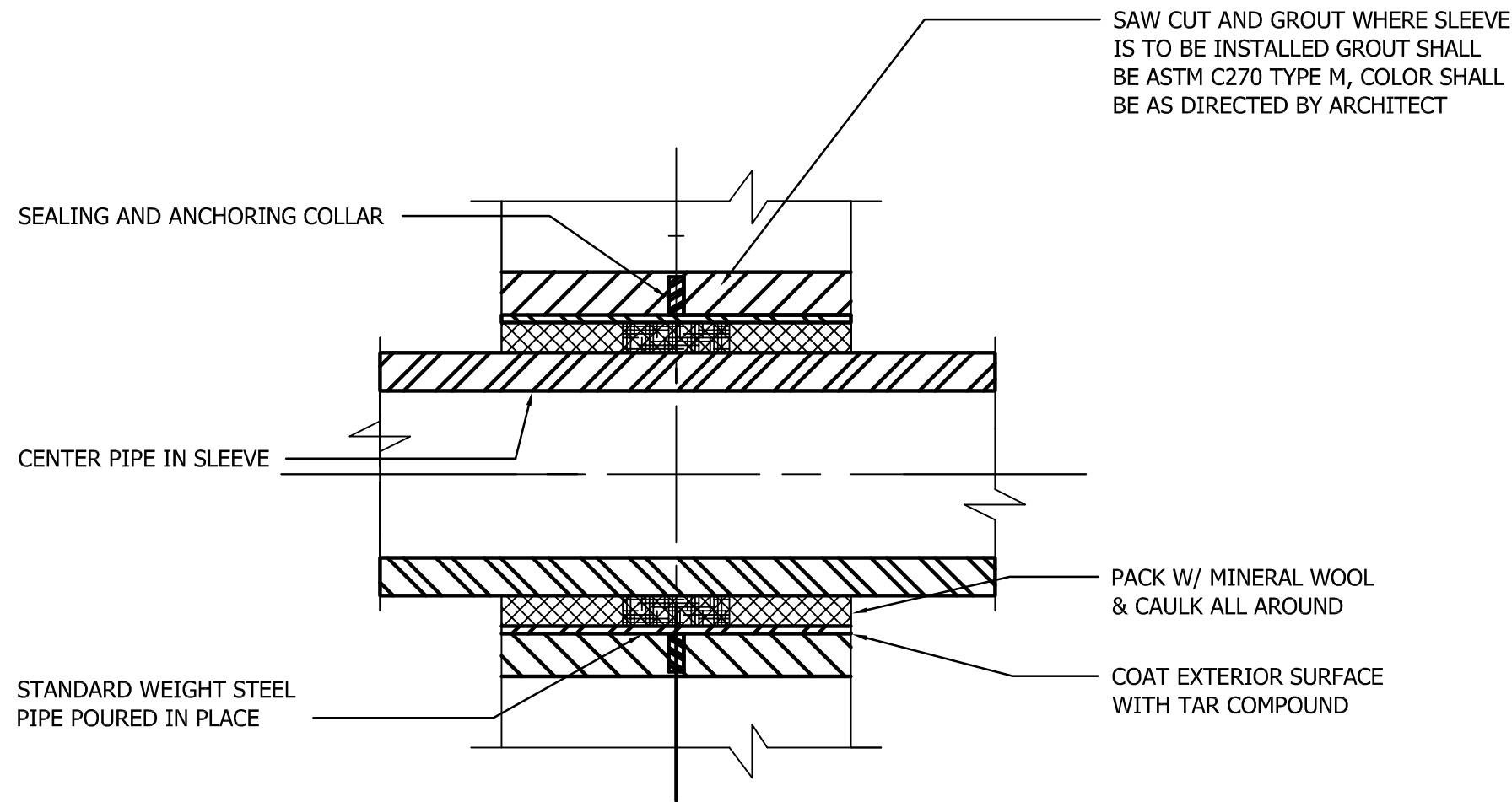


**RISER DIAGRAM - NATURAL GAS**  
SCALE: NONE

**SERVICE DETAILS:**  
INCOMING PRESSURE: 7" W.C.  
REQUIRED FLOW: 1400 CFH  
DEVELOPED LENGTH: 100 FT

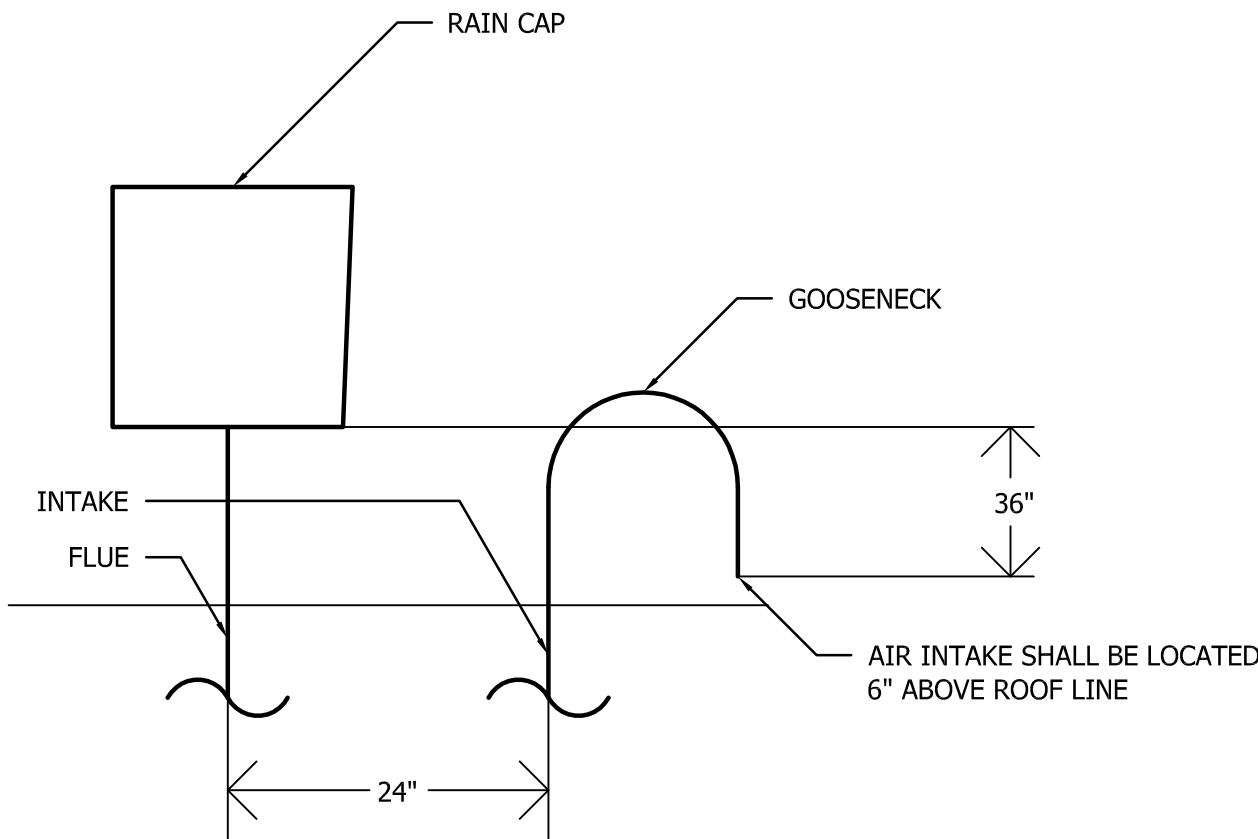


**SECTION - BOILER FLUE AND INTAKE**  
SCALE: NONE



**DETAIL - TYPICAL PIPE SLEEVE THRU EXTERIOR WALL**  
SCALE: NONE

- NOTES:
1. PROVIDE WEATHER TIGHT PIPE SLEEVES AT ALL WALL PENETRATIONS.
  2. REFER TO ARCHITECTURAL DRAWINGS FOR WALL CONSTRUCTIONS.



CONSULTING ENGINEERS

**KIBART**

CONSULTING ENGINEERS

901 Dulaney Valley Road, Suite 301  
Towson, MD 21204

Phone 410-494-1111  
Fax 410-494-1112

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

LICENSE No. : 17655  
EXPIRATION DATE : 1/11/16

ENGINEER'S SEAL

PROJECT TITLE :

**BOILER, SWITCHGEAR & GENERATOR REPLACEMENT**

45 S MAIN ST  
BELAIR, MD 21014

**BID DOCUMENTS**  
**MARCH 21, 2016**

A/E PROJECT NO. : 13055.03

DRAFTED BY: JFE

DESIGNED BY: SPB

CHECKED BY: SPB

DATE: 06/26/2015

REVISIONS		
NO	DATE	ITEM

SHEET TITLE :

**DETAILS - MECHANICAL**

SHEET No.

**M701**

KIBART, INC © 2007 FILE: P:\2013\13055.03\DRAWINGS\HARFORD COUNTY SHERIFF'S OFFICE\SHEETS\MECHANICAL\M801 SCHEDULES -- MECHANICAL.DWG PLOTTED: 2015-06-25 BY: DAVID B. PANEK

BOILER SCHEDULE (GAS FIRED)														
BOILER DESIGNATION	TYPE OF BOILER	LOCATION	GAS INPUT (MBH)	GAS OUTPUT (MBH)	HYDRONIC				BURNER		EFFICIENCY (%)	BASIS OF DESIGN		NOTES
	C.I. / F.T. / COND. / C.F. / W.T.				GPM	EWT (°F)	LWT (°F)	MAX WPD (FT H <sub>2</sub> O)	TYPE OF GAS			MFGR.	MODEL	
									PROPANE / NATURAL	V/ø/HZ				
B-1	COND.	BASEMENT	700	623	65	160	180	30	NATURAL	120/1/60	89	LOCHINVAR	KNIGHT XL KBN701	
B-2	COND.	BASEMENT	700	623	65	160	180	30	NATURAL	120/1/60	89	LOCHINVAR	KNIGHT XL KBN701	
NOTES:														
1: REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION AND ACCESSORIES ASSOCIATED WITH BOILER.										BOILER TYPES:				
2: ENTERING AND LEAVING WATER TEMPERATURES SCHEDULED ARE ADJUSTABLE.										COND. = CONDENSING				

EXPANSION TANK SCHEDULE											
TANK DESIGNATION	SERVICE	TANK TYPE	TANK VOLUME (GALLONS)	PRESSURES		TANK DIMENSIONS		OPERATING WEIGHT (LBS)	BASIS OF DESIGN		NOTES
		BL / DPH		FILL PRESSURE (PSIG)	MAX. OPER. (PSIG)	LENGTH (IN)	DIAMETER (IN)		MFGR.	MODEL	
ET-1	HEATING WATER	BL	158	45	250	71 7/8	24	1777	TACO	CA-600-250	1
ET-2	HEATING WATER	BL	158	45	250	71 7/8	24	1777	TACO	CA-600-250	1
NOTES:											
1: REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION AND ACCESSORIES ASSOCIATED WITH EXPANSION TANK.										TYPES:	
										BL = BLADDER TYPE	
										DPH = DIAPHRAGM TYPE	

PUMP SCHEDULE												
PUMP DESIGNATION	SERVICE	GPM	FT. OF HEAD	PUMP TYPE	PUMP MOTOR			ELECTRICAL CHARACTERISTICS		BASIS OF DESIGN		NOTES
					BHP	HP	RPM	FLA	V/ø/HZ	MFGR.	MODEL	
P-1	HEATING WATER	70	60	IL	2.09	3	1,750	4.0	460/3/60	BELL & GOSSETT	SERIES 80	1,2,3
P-3	ROOM UNITS	41	72	IL	1.63	3	1,750	4.0	460/3/60	BELL & GOSSETT	SERIES 80	1,2,3
P-4	AIR HANDLING UNITS	160	65	IL	4.1	7.5	1,750	9.2	460/3/60	BELL & GOSSETT	SERIES 80	1,2,3
P-7	STAND-BY	41	72	IL	1.63	3	1,750	4.0	460/3/60	BELL & GOSSETT	SERIES 80	1,2,3
P-8	BOILER RECIRCULATING PUMP	65	30	IL	0.81	1	1,725	1.5	460/3/60	BELL & GOSSETT	SERIES E-90	1,2,3
P-9	BOILER RECIRCULATING PUMP	65	30	IL	0.81	1	1,725	1.5	460/3/60	BELL & GOSSETT	SERIES E-90	1,2,3
NOTES:												
1: REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION AND ACCESSORIES ASSOCIATED WITH PUMP.					PUMP TYPES							
2: PROVIDE PREMIUM EFFICIENCY MOTORS.					IL = IN-LINE							
3: PROVIDE PUMP MOTOR SUITABLE FOR VARIABLE SPEED DRIVE OPERATION.					BMES = BASE MOUNTED END SUCTION							
					VIL = VERTICAL IN-LINE							
					FMES = FOOT MOUNTED END SUCTION							
					C.C. = CARTRIDGE CIRCULATION							

2-Pipe System Enable, Control Changeover:  
The network input's (SUNWIN-C) state will command the 2-pipe central plant system to the summer or winter mode thus enabling the heating or cooling system. Summer or winter mode shall be initiated manually, by calendar schedule or based on outside air temperature. Summer/winter isolation valves shall open/close based on the mode.

Manual System Enable:  
The network input's (SUNWIN-C) state shall be manually enabled by the end user.

Calendar Schedule System Enable:  
The network input's (SUNWIN-C) state shall be enabled by time of year calendar schedule.

Cooling System Enable:  
The cooling system will automatically start when the outside air temperature (OA-T) rises above the system enable setpoint (CLGOATLOCKOUT-SP) while the system enable (SYSTEM-EN) is "ON". When the outside air temperature (OA-T) falls below this setpoint (CLGOATLOCKOUT-SP) or the system enable (SYSTEM-EN) is "OFF", the cooling system will be disabled.

Heating System Enable:  
The heating system will automatically start when the outside air temperature (OA-T) falls below the system enable setpoint (HTGOATLOCKOUT-SP) while the system enable (SYSTEM-EN) is "ON". When the outside air temperature (OA-T) rises above this setpoint (HTGOATLOCKOUT-SP) or the system enable (SYSTEM-EN) is "OFF", the heating system will be disabled.

Boiler Control:  
This system consists of two boilers (BLR1 & BLR2). The boilers shall be controlled via sequencer control panel provided by the boiler manufacturer. System shall maintain supply temperature based on outside air temperature (OA-T) reset schedule. Boiler sequencer controller shall be BACnet MS/TP compatible.

Dedicated Boiler Pump Control:  
When enabled, the pump (Px-C) associated with each boiler will be started. If the pump status (Px-S) does not match the command (Px-C), an alarm will be generated and the boiler will be stopped. Upon loss of status (Px-S), the pump (Px-C) will restart after the system is manually reset (SYS-RESET). After the boiler is commanded off, the pump (Px-C) will continue to run for a short time to dissipate the heat.

Pump 1 (Heating Only Areas and AHU Reheat Loop):  
The pump (P1-C) will be started when any downstream control valves open. The variable frequency drive (P1-O) will be modulated to maintain loop pressure (HW-DP). Setpoint shall be recommended by the balancing contractor. A bypass valve (BYPV-O) will be modulated to maintain differential pressure setpoint (HWDP-SP) in the secondary water loop when the pump (P1-O) output is commanded to minimum speed. If the pump status (P1-S) does not match the command (P1-C), an alarm will be generated and the pump will be stopped. Upon loss of status (P1-S), the pump (P1-C) will restart after the system reset (SYS-RESET) is manually activated. Loop supply temperature (S-T) and return temperature (R-T) shall be monitored.

Pump 3 (Room Units and AHU Reheat Loop):  
The pump (P3-C) will be started when any downstream control valves open. The variable frequency drive (P3-O) will be modulated to maintain loop pressure (HW-DP). Setpoint shall be recommended by the balancing contractor. A bypass valve (BYPV-O) will be modulated to maintain differential pressure setpoint (HWDP-SP) in the secondary water loop when the pump (P3-O) output is commanded to minimum speed. If the pump status (P3-S) does not match the command (P3-C), an alarm will be generated and the pump will be stopped. Upon loss of status (P3-S), the pump (P3-C) will restart after the system reset (SYS-RESET) is manually activated. Loop supply temperature (S-T) and return temperature (R-T) shall be monitored.

Pump 7 (Standby for Pumps 1 or 3):  
The pump (P7-C) will be started manually to replace P1 or P3 control. The variable frequency drive (P7-O) will be modulated to maintain loop pressure (HW-DP). Setpoint shall be recommended by the balancing contractor. A bypass valve (BYPV-O) will be modulated to maintain differential pressure setpoint (HWDP-SP) in the secondary water loop when the pump (P7-O) output is commanded to minimum speed. If the pump status (P7-S) does not match the command (P7-C), an alarm will be generated and the pump will be stopped. Upon loss of status (P7-S), the pump (P7-C) will restart after the system reset (SYS-RESET) is manually activated. Loop supply temperature (S-T) and return temperature (R-T) shall be monitored.

Pump 4 (AHU Cooling Loop):  
The pump (P4-C) will be started when any downstream control valves open. The variable frequency drive (P4-O) will be modulated to maintain loop pressure (HW-DP). Setpoint shall be recommended by the balancing contractor. A bypass valve (BYPV-O) will be modulated to maintain differential pressure setpoint (HWDP-SP) in the secondary water loop when the pump (P4-O) output is commanded to minimum speed. If the pump status (P4-S) does not match the command (P4-C), an alarm will be generated and the pump will be stopped. Upon loss of status (P4-S), the pump (P4-C) will restart after the system reset (SYS-RESET) is manually activated. Loop supply temperature (S-T) and return temperature (R-T) shall be monitored.

Boiler Circulation Pumps, P-8 and P-9:  
When the associated boiler energizes, the pump shall energize.  
When the associated boiler de-energizes, the pump shall de-energize.

## SEQUENCE OF OPERATION

- NOTES:
- A NEW BAS SHALL BE PROVIDED FOR NEW EQUIPMENT.
  - THE EXISTING PNEUMATIC SYSTEM SHALL REMAIN IN ORDER TO CONTROL THE REMAINING EQUIPMENT.

CONSULTING ENGINEERS

KIBART

CONSULTING ENGINEERS

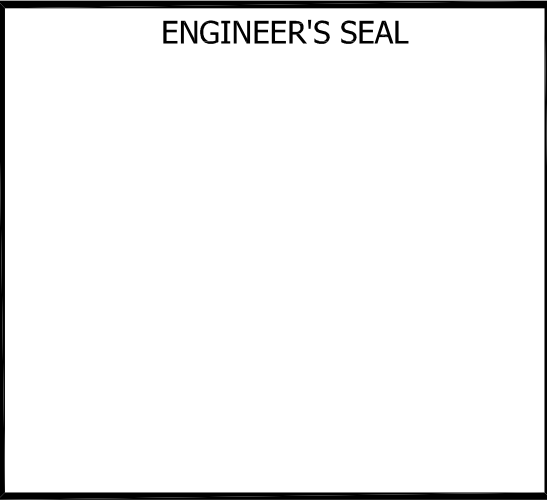
901 Dulaney Valley Road, Suite 301  
Towson, MD 21204

Phone 410-494-1111  
Fax 410-494-1112



PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

LICENSE No. : 17655  
EXPIRATION DATE : 1/11/16



PROJECT TITLE :	
<b>BOILER, SWITCHGEAR &amp; GENERATOR REPLACEMENT</b>	
45 S MAIN ST BELAIR, MD 21014	
<b>BID DOCUMENTS MARCH 21, 2016</b>	
A/E PROJECT NO. :	13055.03
DRAFTED BY:	JFE
DESIGNED BY:	SPB
CHECKED BY:	SPB
DATE:	06/26/2015

REVISIONS		
NO	DATE	ITEM

SHEET TITLE :
<b>SCHEDULES - MECHANICAL</b>

SHEET No.
<b>M801</b>

ELECTRICAL LEGEND	
SYMBOL	DESCRIPTION
	DRAWING NOTE
	HVAC EQUIPMENT CONNECTION SCHEDULE REFERENCE
	ELECTRICAL FEEDER SCHEDULE REFERENCE
	EXISTING OR FUTURE EQUIPMENT, AS NOTED THIN/SOLID
	EXISTING EQUIPMENT TO BE REMOVED, HEAVY/DASHED
	EXISTING EQUIPMENT TO BE RELOCATED, HEAVY/DASHED
	STRIP OR INDUSTRIAL FLUORESCENT FIXTURE
	EXIT SIGN, CEILING OR WALL MOUNTED - DARKENED PORTION INDICATES THE FACE OF EXIT SIGN AND THE ARROW INDICATES DIRECTIONAL FACE
	EMERGENCY OR NITE-LITE FIXTURE, AS NOTED
	20 AMP SWITCH, SINGLE POLE, 3-WAY, 4-WAY. SUBSCRIPT IDENTIFIES FIXTURE CONTROLLED
	ELECTRONIC TIMER SWITCH; 3-WAY; OCCUPANCY SENSOR L.V. MANUAL ON SWITCH.
	NEMA 5-20R RECEPTACLE. M.H. 18", M.H. 6" ABOVE COUNTER HEIGHT
	RECEPTACLE ON EMERGENCY (E) OR UPS (U) CIRCUIT AS NOTED BY LETTER
	DOUBLE DUPLEX NEMA 5-20R RECEPTACLE. M.H. 18"
	CONTROL PANEL - TYPE AS INDICATED
	PUSH TO EXIT BUTTON (CARD ACCESS SYSTEM.) M.H. 48" AFF
	JUNCTION BOX
	CONDUIT OR CONDUIT AND WIRE ROUTED IN GRADE OR BELOW SLAB
	CONDUIT AND WIRE OR CABLE ROUTED WITHIN WALLS OR CEILING SPACE OR ROUTED EXPOSED ON WALLS OR CEILINGS. CROSSLINES INDICATE THE NUMBER OF CONDUCTORS IF MORE THAN TWO (NOT INCLUDING GROUND)
	HOMERUN TO PANELBOARD. NUMBER OF ARROWS INDICATES THE NUMBER OF CIRCUITS
	EMERGENCY CIRCUIT WIRING
	UPS CIRCUIT WIRING
	SURFACE METAL RACEWAY
	CONDUIT ENTRANCE FROM ABOVE, FROM BELOW
	DISCONNECT SWITCH - 3P-30A UNLESS OTHERWISE NOTED; FUSED, NON-FUSED
	ENCLOSED CIRCUIT BREAKER
	PUSHBUTTON, FUNCTION AS NOTED; M.H. 48" AFF UNLESS NOTED OTHERWISE
	DISTRIBUTION PANELBOARD
	BRANCH CIRCUIT PANELBOARD; SURFACE MOUNTED, FLUSH MOUNTED
	TRANSFORMER (INTERIOR)
	TRANSFORMER (RISER DIAGRAM)
	TRANSFER SWITCH, AUTOMATIC AS INDICATED
	CIRCUIT BREAKER (MOLDED CASE)
	FUSE, SIZE AS INDICATED
	UNFUSED SWITCH
	EMERGENCY GENERATOR
	GROUND ROD
	GROUND CONNECTION

## GENERAL DEMOLITION PROJECT NOTES

- INFORMATION SHOWN ON THIS DRAWING PERTAINING TO EXISTING CONDITIONS HAS BEEN OBTAINED FROM EXISTING DRAWINGS OR GENERAL FIELD OBSERVATIONS AND MAY NOT INDICATE ACTUAL EXISTING CONDITIONS IN DETAIL OR DIMENSION. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE ACTUAL CONDITIONS AND EFFECT ON HIS WORK PRIOR TO FABRICATION, ROUGHIN, MATERIAL ORDERS OR PERFORMANCE OF THE WORK. SHOULD CONDITIONS BE DISCOVERED THAT PREVENT EXECUTION OF THE WORK AS INDICATED, IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING FOR DIRECTION BEFORE PROCEEDING WITH THE WORK.
- REMOVE ALL EQUIPMENT INDICATED, INCLUSIVE OF ASSOCIATED CONDUIT, WIRING, BOXES, ETC. BACK TO SOURCE OR LAST REMAINING DEVICE ON SAME CIRCUIT, UNLESS NOTED OTHERWISE.
- EXISTING CIRCUITS INTERRUPTED BY DEMOLITION OR RELOCATION WORK, BUT SERVING ITEMS INDICATED TO REMAIN, SHALL BE MADE CONTINUOUS.
- DEMOLITION SHALL INCLUDE REMOVAL OF ELECTRICAL EQUIPMENT AND ASSOCIATED COMPONENTS AND MATERIALS. DO NOT ABANDON IN PLACE ANY ITEMS UNLESS NOTED ON THE DRAWINGS. EQUIPMENT REMOVED SHALL BE OFFERED TO THE OWNER PRIOR TO DISPOSAL, AND IF DESIRED, SHALL BE STORED ON SITE, WHEREINSTRUCTED. ALL MATERIALS NOT TO BE RETAINED BY OWNER SHALL BE REMOVED FOR OFF-SITE, LEGAL DISPOSAL.
- UNLESS NOTED OTHERWISE, ELECTRICAL ITEMS SHOWN HEAVY/DASHED ( — — — ) SHALL BE REMOVED AND/OR RELOCATED. ELECTRICAL ITEMS SHOWN LIGHT/SOLID ( — ) ARE EXISTING TO REMAIN. ELECTRICAL ITEMS SHOWN HEAVY/SOLID ( ——— ) REPRESENTS NEW WORK.

## GENERAL DEMOLITION PROJECT NOTES

- THE EXISTING FACILITY SHALL REMAIN IN OPERATION DURING CONSTRUCTION. ALL INTERRUPTIONS TO UTILITIES OR SERVICES MUST BE COORDINATED WITH THE OWNER OR USING AGENCY TO MINIMIZE DISRUPTIONS. PROVIDE NOTICE TO THE FACILITY AND OWNER 15 DAYS IN ADVANCE OF PLANNED OUTAGES.
- THE BUILDING IS OCCUPIED DURING THE WORK, EXISTING FIRE ALARM AND LIFE SAFETY SYSTEMS SHALL BE KEPT IN OPERATION.
- NOTIFY OWNER OF ANY DAMAGED OR NON-WORKING ITEMS PRIOR TO REMOVAL. ANY EQUIPMENT DAMAGED DURING REMOVAL AND/OR RELOCATION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE WITH EQUIPMENT EQUAL TO EXISTING.
- ANY OPENINGS LEFT IN CEILINGS/WALLS SHALL BE PATCHED AND FINISHED TO MATCH EXISTING ADJACENT SURFACES. WHERE DEVICES ARE REMOVED FROM CEILING TILES, PROVIDE REPLACEMENT TILE(S) TO MATCH EXISTING.
- DISCONNECT AND REMOVE ALL ASSOCIATED ELECTRICAL CONNECTIONS FOR EXISTING HVAC AND PLUMBING EQUIPMENT BEING REMOVED, INCLUDING: CONDUIT, WIRING, OUTLETS, DISCONNECTING MEANS, STARTERS, SWITCHES, ETC. REFER TO MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.

## GENERAL PROJECT NOTES

- DRAWINGS ARE DIAGRAMMATIC AND GENERALLY REPRESENTATIVE OF THE WORK REQUIRED. VERIFY ALL WORK ON SITE AND REPORT ANY CONFLICTS TO THE ENGINEER FOR REVIEW PRIOR TO PROCEEDING WITH WORK OR CHANGES.
- PROVIDE NEW TYPED CIRCUIT DIRECTORIES FOR ALL NEW PANELBOARDS AND ANY EXISTING PANELS IN WHICH CIRCUITS WERE MODIFIED.
- ALL PANELBOARD AND SWITCHBOARD SCHEDULES ARE BASED ON COPPER CONDUCTORS. WHERE ALUMINUM CONDUCTORS ARE PERMITTED BY SPECIFICATIONS, CONTRACTOR SHALL ADJUST CONDUCTOR AND CONDUIT SIZES TO MAINTAIN SAME AMPACITY RATINGS.
- ALL CONDUIT, BOXES, CABLE TRAY, ETC. SHALL GENERALLY BE INSTALLED A MINIMUM OF 12" ABOVE CEILINGS. COORDINATE WITH OTHER TRADES PRIOR TO INSTALLATION.
- ALL PROJECT CONDUIT AND CABLING SHALL BE INSTALLED ABOVE FINISHED CEILINGS, WHERE POSSIBLE TO MINIMIZE VISIBILITY OF SUCH ITEMS IN AREAS WITH EXPOSED STRUCTURE. ALL CABLING INSTALLED IN EXPOSED STRUCTURE AREAS, SHALL BE IN EMT CONDUIT INSTALLED TIGHT TO DECK ABOVE, EXCEPT FOR SHORT FINAL CONNECTIONS TO FIRE ALARM DEVICES, LIGHT FIXTURES, ETC. MC CABLE SHALL BE PERMITTED WHERE INSTALLED ABOVE FINISHED CEILINGS OR CONCEALED IN PARTITION WALLS.
- WHERE THE WORK OF THIS CONTRACT, INCLUDING THAT OF ALL OTHER DISCIPLINES, REQUIRES THE REMOVAL AND REPLACEMENT OF THE CEILING, PROVIDE FOR REMOVAL AND REINSTALLATION OF ELECTRICAL DEVICES AND EQUIPMENT MOUNTED IN OR ON THE CEILING. ALTERNATELY, THE CONTRACTOR MAY PROVIDE TEMPORARY SUPPORT FOR SUCH DEVICES, INCLUDING REINSTALLATION INTO NEW CEILING.
- ALL LOW VOLTAGE CABLING INSTALLED ABOVE CEILINGS AND NOT IN RACEWAYS SHALL BE PLENUM RATED.
- ALL BRANCH CIRCUITS SHALL UTILIZE INDIVIDUAL NEUTRAL CONDUCTORS. SHARED NEUTRALS AND MULTI-WIRE CIRCUITS ARE NOT PERMITTED.
- ALL BRANCH CIRCUITS AND FEEDERS SHALL INCLUDE AN EQUIPMENT GROUNDING CONDUCTOR. CONDUIT IS NOT PERMITTED AS THE SOLE GROUND PATH.
- PROVIDE ACCESS PANELS FOR ALL DUCT SMOKE DETECTORS, JUNCTION BOXES, AND OTHER EQUIPMENT REQUIRING ACCESS OR ADJUSTMENT, AND LOCATED ABOVE HARD CEILINGS OR BEHIND WALL PARTITIONS, IN CHASES, ETC.
- UNLESS LARGER GAUGE IS INDICATED ON PANEL SCHEDULES, BRANCH CIRCUIT WIRING SHALL COMPENSATE FOR VOLTAGE DROP, AS FOLLOWS:

a. 120V, 0-90LF: #12AWG

b. 120V, 91-140LF: #10 AWG

c. 120V, >140LF: #8 AWG

277V, 0-150LF: #12 AWG

277V, 151-240LF: #10 AWG

277V, >240LF: #8 AWG
- UNLESS NOTED OTHERWISE, ALL WIRING & CONDUIT/CABLING SHOWN ON FLOOR PLANS IS FOR DIAGRAMMATIC PURPOSES ONLY. COORDINATE EXACT INSTALLATION REQUIREMENTS WITH FIELD CONDITIONS AND INSTALL PER SPECIFICATIONS. FOR LIGHT FIXTURES, WIRING SHALL NOT PASS THROUGH ANY LUMINAIRE INTEGRAL JUNCTION BOX UNLESS LUMINAIRE IS IDENTIFIED FOR "THROUGH-WIRING".
- MINIMUM INTERIOR RIGID CONDUIT SIZE SHALL BE ¾" UNLESS NOTED OTHERWISE.
- MULTIPLE SWITCHES IN THE SAME LOCATION SHALL USE A SINGLE MULTI-GANG DEVICE BOX AND COVER PLATE.
- NOTIFY MISS UTILITY OR NATIONAL "811" MINIMUM OF 48 HOURS PRIOR TO DIGGING. ON SITES WHERE SUCH SERVICES ARE NOT APPLICABLE, PROVIDE SERVICES OF AN UNDERGROUND UTILITY LOCATING CONTRACTOR TO LOCATE AND MARK ALL BURIED UTILITIES IN THE REGION WHERE EXCAVATION IS TO OCCUR.
- EXISTING PUBLIC AND PRIVATE UTILITIES SHOWN HEREIN REFLECT AVAILABLE DATA, AND MAY NOT REPRESENT AS-BUILT CONDITIONS. LOCATE AND PROTECT ALL UTILITIES WHICH ARE TO REMAIN IN USE, WHETHER SHOWN OR NOT. PROVIDE AMPLE COVER AND PROTECTION OF ALL INSTALLED UTILITIES DURING THE CONSTRUCTION OF THIS PROJECT.
- CONFORM TO ALL FEDERAL, STATE AND LOCAL REQUIREMENTS FOR STORM WATER AND SEDIMENT & EROSION CONTROL, AS APPLICABLE TO THE SITE WORK OF THIS CONTRACT, INCLUDING ALL EXCAVATION AND TRENCHING.
- ALL DEBRIS CREATED AS A RESULT OF TRENCHING OR SITE UTILITY INSTALLATION SHALL BE LEGALLY DISPOSED OF OFF-SITE.
- TRENCHING WORK SHALL BE LIMITED TO A MAXIMUM OF 100LF OF OPEN TRENCH AT ANY TIME. EXCEPTIONS CAN ONLY BE APPROVED BY THE STATE'S DEPARTMENT OF THE ENVIRONMENT UPON SUBMISSION OF A SEDIMENT AND EROSION CONTROL PLAN.

## GENERAL PROJECT NOTES (CON'T)

- ALL UNDERGROUND CONDUITS SHALL BE SCHEDULE 40 PVC, DIRECT BURIED OR CONCRETE ENCASED, AS INDICATED. MINIMUM BURIAL DEPTHS SHALL BE PER NEC.
- ALL BURIED CABLES/CONDUIT/DUCTBANKS, HANDHOLES, MANHOLES, EQUIPMENT PADS, LIGHT POLE FOUNDATIONS, ETC. SHALL BE COORDINATED WITH FINAL GRADES PRIOR TO INSTALLATION.
- FOR OUTDOOR GENERATORS, COORDINATE DIRECTION OF RADIATOR AND EXHAUST DISCHARGE TO BE AWAY FROM BUILDINGS, STRUCTURES, ETC. AS INDICATED ON PLANS. MAINTAIN MINIMUM 10 FT FRONT CLEARANCE AT RADIATOR DISCHARGE.
- PROVIDE "WARNING-HIGH VOLTAGE" SIGNS ON ALL EXTERIOR PAD MOUNTED TRANSFORMERS, SWITCHGEAR, GENERATORS, EQUIPMENT YARD FENCES, ETC.
- REMOVE ALL EXISTING ELECTRICAL EQUIPMENT, AS INDICATED, INCLUDING ASSOCIATED CONCRETE PADS, FOUNDATIONS, AND CONDUIT DOWN TO A DEPTH OF 48" BELOW FINAL FINISHED GRADE.
- REFER TO PHASING NOTES ON MECHANICAL COVER SHEET.
- TURN OVER EXISTING GENERATOR, AUTOMATIC TRANSFER SWITCH AND BOILER BURNERS TO OWNER.

## ELECTRICAL ABBREVIATIONS

A	AMPERE	IMC	INTERMEDIATE METAL CONDUIT
AFF	ABOVE FINISHED FLOOR	KV	KILOVOLTS
AF	AMPERE FRAME	KVA	KILOVOLT-AMPERE
ACU	AIR CONDITIONING UNIT	KW	KILOWATT
AFG	ABOVE FINISHED GRADE	L.V.	LOW VOLTAGE
AHU	AIR HANDLING UNIT	MAX	MAXIMUM
AIC	AMPS INTERRUPTING CURRENT	MFG	MANUFACTURER
ALT	ALTERNATE	MH	MANHOLE
AT	AMPERE TRIP	M.H.	MOUNTING HEIGHT
ATS	AUTOMATIC TRANSFER SWITCH	MIN	MINIMUM
AWG	AMERICAN WIRE GAUGE	MTD	MOUNTED
BLDG	BUILDING	NAC	NOTIFICATION APPLIANCE CIRCUIT
BSBD	BASEBOARD	No.	NUMBER
C	CONDUIT	N.C.	NORMALLY CLOSED
CKT	CIRCUIT	N.O.	NORMALLY OPEN
CONC	CONCRETE	NFSS	NON-FUSED SAFETY SWITCH
CR	CONTROL RELAY	P	POLE
DWG	DRAWING	PF	POWER FACTOR
EF	EXHAUST FAN	PNL	PANEL
EMERG	EMERGENCY	PR	PAIR
EMR	ELEVATOR MACHINE ROOM	PVC	POLYVINYL CHLORIDE (SCHEDULE 40)
EMT	ELECTRICAL METALLIC TUBING	PRI	PRIMARY
ENCL	ENCLOSURE	□	PHASE
FAAP	FIRE ALARM ANNUNCIATOR PANEL	QTY	QUANTITY
FACP	FIRE ALARM CONTROL PANEL	RGS	RIGID GALVANIZED STEEL
FLEX	FLEXIBLE	RM	ROOM
FSS	FUSED SAFETY SWITCH	RX	REMOVE EXISTING
GA	GAUGE	SWBD	SWITCHBOARD
GEN	GENERATOR	TEMP	TEMPERATURE
GFI	GROUND FAULT INTERRUPTING	TYP	TYPICAL
GFP	GROUND FAULT PROTECTION	UH	UNIT HEATER
GND	GROUND	UTP	UNSHIELDED TWISTED PAIR
HOA	HAND-OFF-AUTOMATIC (SWITCH)	V	VOLTS
HP	HORSEPOWER	VAC	VOLTS - ALTERNATING CURRENT
HTR	HEATER	W	WIRE
HWH	HOT WATER HEATER	WP	WEATHERPROOF
IDC	INITIATING DEVICE CIRCUIT	XFMR	TRANSFORMER

## Sheet List Table

Sheet Number	Sheet Title
E001	COVER SHEET - ELECTRICAL
E002	ELECTRICAL SITE PLAN
E101	DEMOLITION & NEW WORK - BASEMENT - ELECTRICAL
E401	ELECTRICAL RISER DIAGRAM
E501	ELECTRICAL DETAILS
E801	HVAC & PANEL SCHEDULES - ELECTRICAL

CONSULTING ENGINEERS

**KIBART**  
CONSULTING ENGINEERS  
801 Dulles Valley Road, Suite 301  
Towson, MD 21204  
Phone 410-494-1111  
Fax 410-494-1112

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

LICENSE No : 17655  
EXPIRATION DATE : 1/11/16

ENGINEER'S SEAL

PROJECT TITLE :

## BOILER, SWITCHGEAR & GENERATOR REPLACEMENT

45 S MAIN ST  
BELAIR, MD 21014

**BID DOCUMENTS**  
**MARCH 21, 2016**

A/E PROJECT NO. :	13055.03
DRAFTED BY:	DBP
DESIGNED BY:	DBP
CHECKED BY:	DBP
DATE:	06/26/2015

## REVISIONS

NO	DATE	ITEM

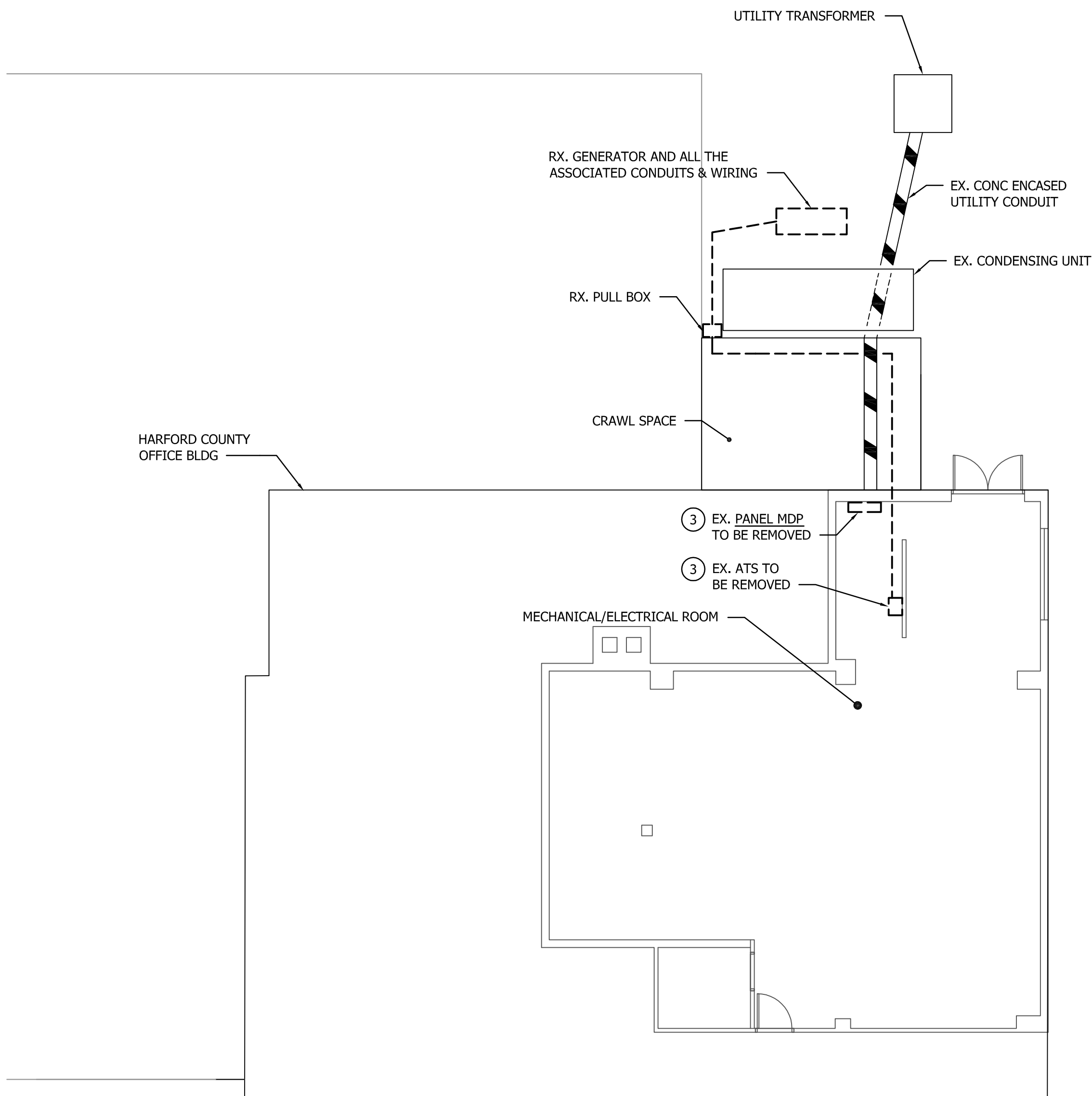
SHEET TITLE :

## COVER SHEET - ELECTRICAL

SHEET No.

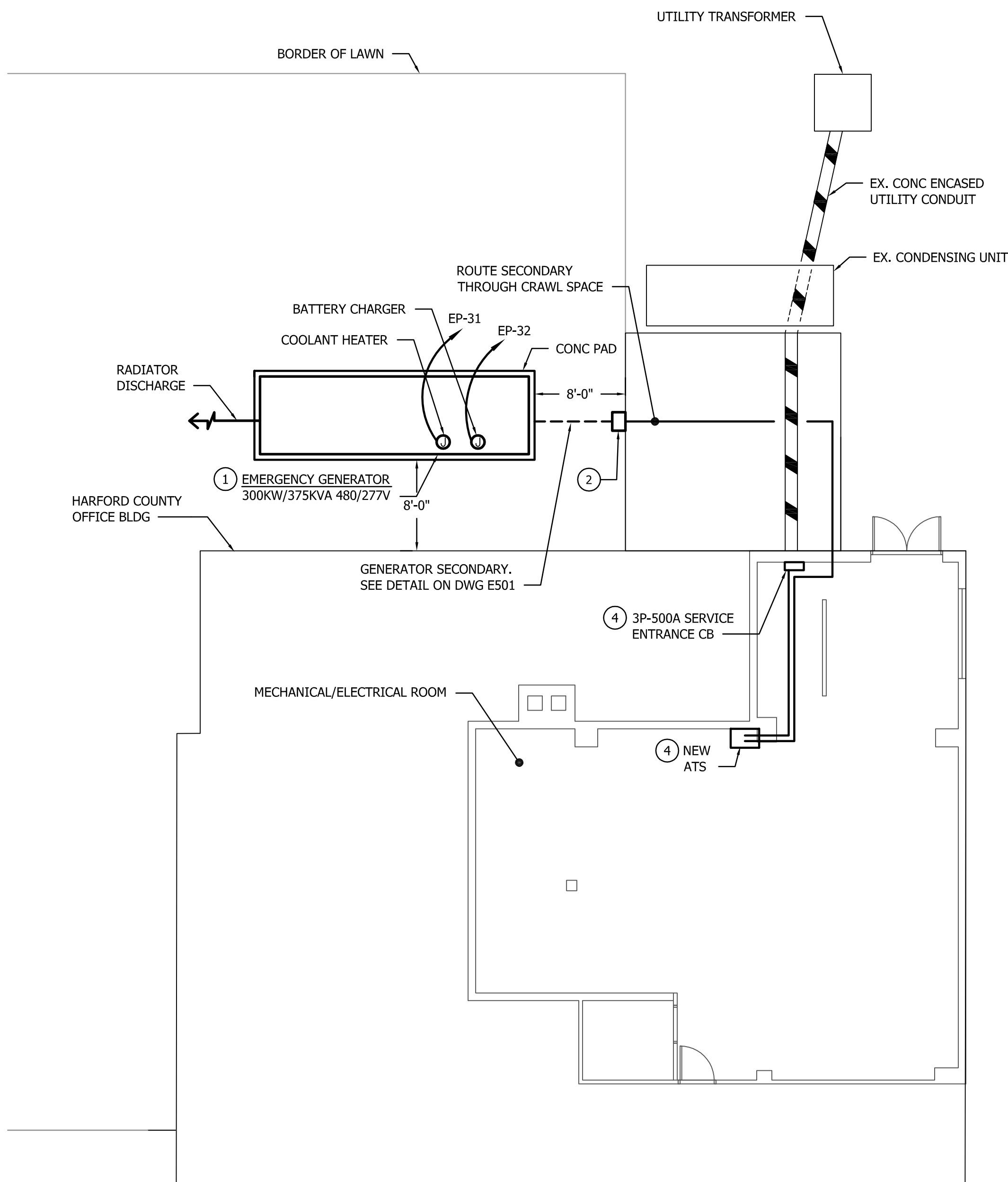
**E001**

KIBART, INC © 2007 FILE: P:\2013\13055.03\DRAWINGS\HARFORD COUNTY SHERIFF'S OFFICE\SHEETS\ELECTRICAL\13055.03-E002 ELECTRICAL SITE PLAN.DWG PLOTTED: 2015-06-25 BY: DAVID B. PANEK



 **ELECTRICAL SITE PLAN - DEMOLITION**  
SCALE: 1/8" = 1'-0"

W PENNSYLVANIA AVE



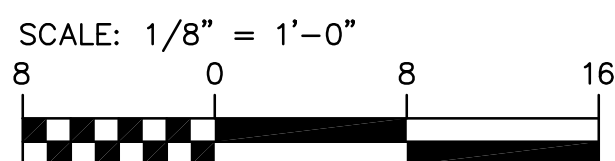
 **ELECTRICAL SITE PLAN - NEW WORK**  
SCALE: 1/8" = 1'-0"

**GENERAL NOTE**

- COORDINATE EXACT LOCATION OF GENERATOR AND MAINTAIN MINIMUM CLEARANCE BETWEEN GENERATOR AND BLDG.

**DRAWING NOTE**

- PROVIDE GROUND RODS & COUNTERPOISE AT EACH PAD PER SPECS & NEC.
- PROVIDE PULL BOX ON BLDG WALL AT GENERATOR BLDG ENTRY POINT.
- SEE DETAIL ON REMOVAL OF EQUIPMENT ON SHEET E101 "ELECTRICAL - BASEMENT - DEMOLITION".
- SEE DETAIL ON INSTALLATION OF NEW EQUIPMENT ON SHEET E101 "ELECTRICAL - BASEMENT - NEW WORK".



CONSULTING ENGINEERS

KIBART

CONSULTING ENGINEERS

901 Dulaney Valley Road, Suite 301  
Towson, MD 21204  
Phone 410-494-1111  
Fax 410-494-1112

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

LICENSE No : 17655  
EXPIRATION DATE : 1/11/16

ENGINEER'S SEAL

PROJECT TITLE :

**BOILER,  
SWITCHGEAR &  
GENERATOR  
REPLACEMENT**

45 S MAIN ST  
BELAIR, MD 21014

**BID DOCUMENTS  
MARCH 21, 2016**

A/E PROJECT NO. :	13055.03
DRAFTED BY:	DD
DESIGNED BY:	DBP
CHECKED BY:	DBP
DATE:	06/26/2015

REVISIONS		
NO	DATE	ITEM

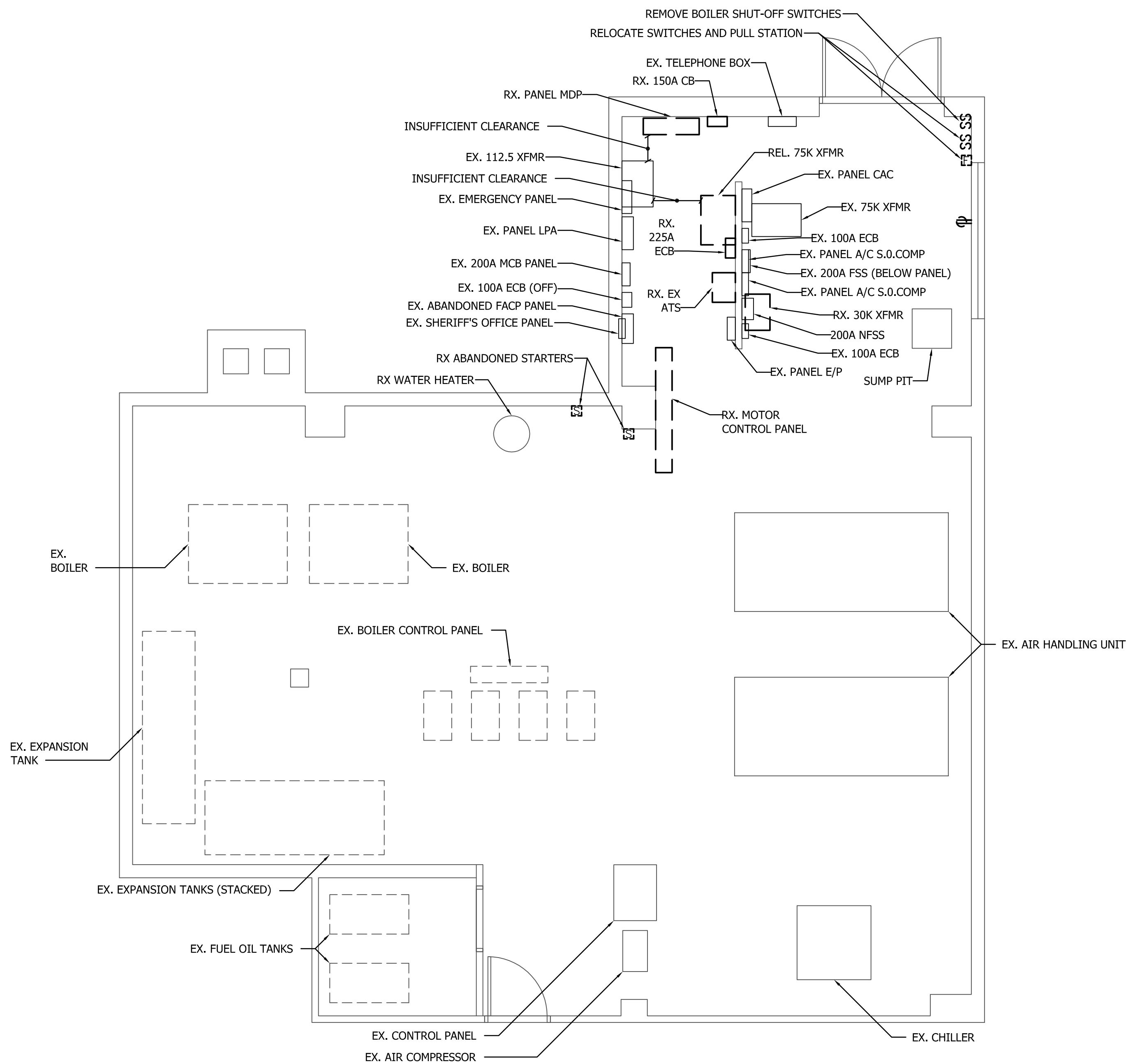
SHEET TITLE :

**ELECTRICAL SITE  
PLAN**

SHEET No.

**E002**

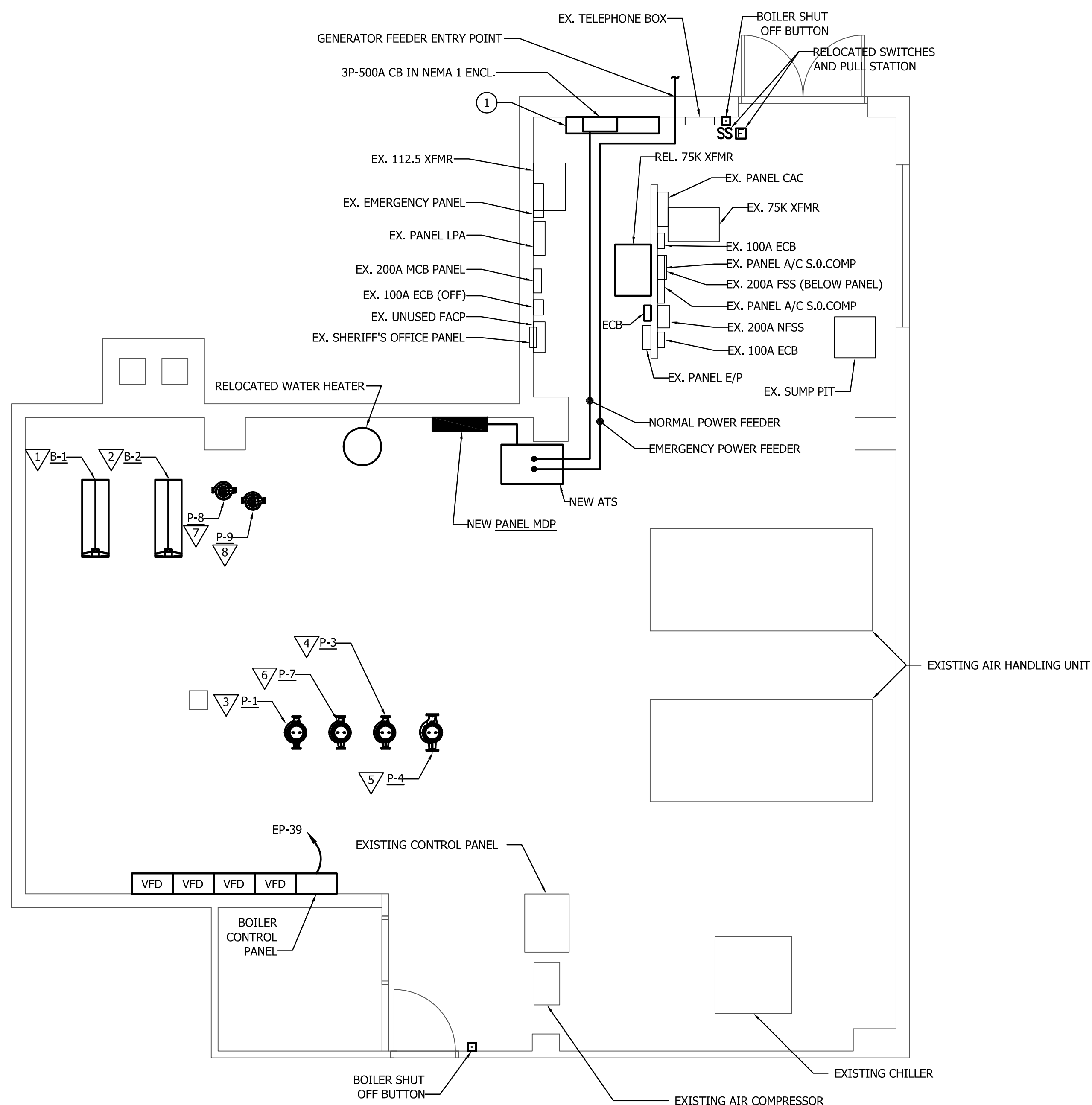
KIBART, INC. © 2007 FILE: P:\2013\13055.03\DRAWINGS\HARFORD COUNTY SHERIFF'S OFFICE\13055.03-E101 DEMOLITION - BASEMENT - ELECTRICAL.DWG PLOTTED: 2015-06-25 BY: DAVID B. PANEK



 **ELECTRICAL - BASEMENT - DEMOLITION**  
SCALE: 1/4"=1'-0"

#### DRAWING NOTE

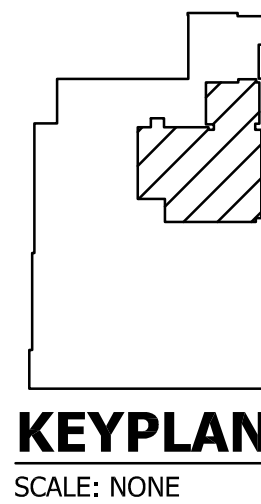
1. PROVIDE PULL BOX AND CONNECT TO ALL EXISTING CONDUITS THAT EXIT OUT OF THE TOP OF OLD MDP PANEL.



 **ELECTRICAL - BASEMENT - NEW WORK**  
SCALE: 1/4"=1'-0"

#### GENERAL NOTE

1. REMOVE ALL WIRING AND CONDUITS ASSOCIATED WITH MECHANICAL EQUIPMENT THAT IS BEING DEMOLISHED. SEE MECHANICAL DWG FOR DETAILS ON DEMOTION OF MECHANICAL EQUIPMENT.
2. FOR EX. MECH EQUIPMENT FED FROM OLD MDP PANEL OR MCC THAT IS NOT BEING DEMOLISHED, RECONNECT POWER TO THE NEW MDP PANEL AS INDICATED IN THE PANEL SCHEDULE.



SCALE: 1/4" = 1'-0"



CONSULTING ENGINEERS

**KIBART**  
CONSULTING ENGINEERS  
901 Dulaney Valley Road, Suite 301  
Towson, MD 21204  
Phone 410-494-1111  
Fax 410-494-1112

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.  
LICENSE No : 17655  
EXPIRATION DATE : 1/11/16

ENGINEER'S SEAL

PROJECT TITLE :

### BOILER, SWITCHGEAR & GENERATOR REPLACEMENT

45 S MAIN ST  
BELAIR, MD 21014

**BID DOCUMENTS**  
**MARCH 21, 2016**

A/E PROJECT NO. :	13055.03
DRAFTED BY:	DD
DESIGNED BY:	DBP
CHECKED BY:	DBP
DATE:	06/26/2015

#### REVISIONS

NO	DATE	ITEM

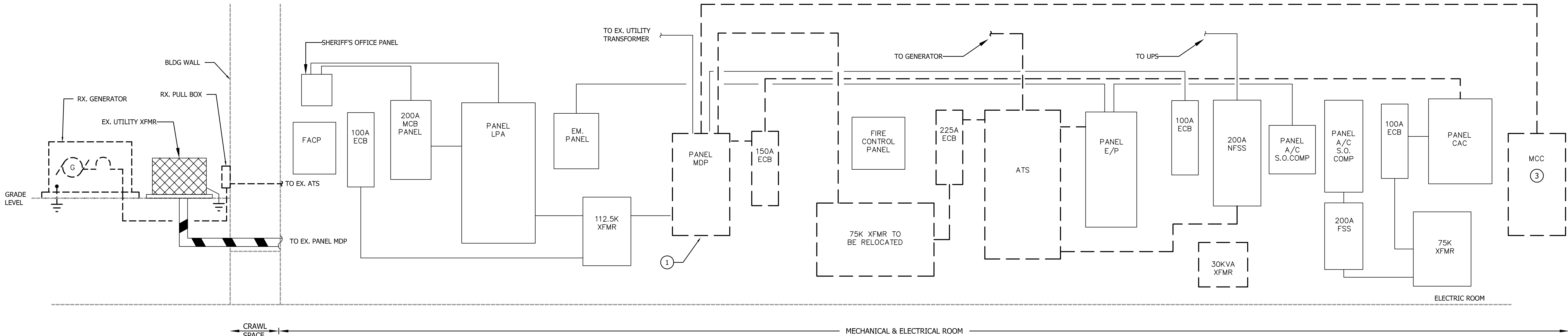
SHEET TITLE :

### DEMOLITION + NEW WORK - BASEMENT - ELECTRICAL

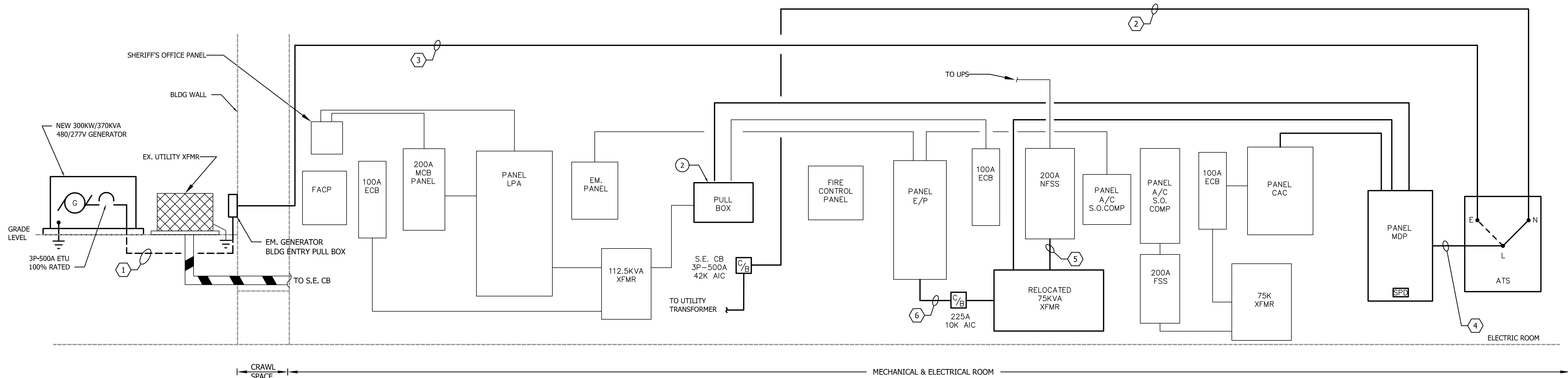
SHEET No.

**E101**

KIBART, INC. © 2007 FILE: P:\2013\13055.03\DRAWINGS\HARFORD COUNTY SHERIFF'S OFFICE\SHEETS\ELECTRICAL\13055.03-E401 ELECTRICAL RISER DIAGRAM.DWG PLOTTED: 2015-06-25 BY: DAVID B. PANEK



**ELECTRICAL RISER DIAGRAM - DEMOLITION**  
NO SCALE



**ELECTRICAL RISER DIAGRAM - NEW WORK**  
NO SCALE

FEEDER SCHEDULE								
#	FROM	TO	# SETS	WIRE			CONDUITS	COMMENTS
				QTY	SIZE (φ,N)	GND		
1	EM GENERATOR	EM GENERATOR BLDG ENTRY SPLICE BOX	2	4	350 KC MIL AL	#1/0 AL	(4) 3" PVC	BELOW SLAB
2	S.E. CB	ATS	2	4	250 KC MIL	#2	(2) 3"	
3	GENERATOR ENTRY PULL BOX	ATS	2	4	250 KC MIL	#2	(2) 3"	
4	ATS	PNL MDP	2	4	250 KC MIL	2/0	2-1/2"	
5	REL 75 KVA XFMR	200A NFSS	1	4	3/0	#4	2"	
6	REL 75 KVA XFMR	PNL E/P	1	4	#1	#6	1-1/2"	

**DRAWING NOTE:**

- 1 REMOVE OLD MDP PANEL. RETAIN ALL WIRE AND CONDUITS EXITING FROM THE OLD MDP FOR RE-ROUTING.
- 2 PROVIDE OVERHEAD PULL BOX. FEED ALL WIRE AND CONDUIT FROM THE OLD MDP PANEL THROUGH THIS BOX FROM THE NEW MDP PANEL.
- 3 TEMPORARILY FEED MCC FROM 3P-60A CIRCUIT BREAKER IN NEW PANEL MDP. TRANSFER ALL LOADS FROM MCC TO NEW MDP PRIOR TO REMOVAL OF MCC.

CONSULTING ENGINEERS

KIBART

CONSULTING ENGINEERS

901 Dulaney Valley Road, Suite 301  
Towson, MD 21204  
Phone 410-494-1111  
Fax 410-494-1112

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

LICENSE No. : 17655  
EXPIRATION DATE : 1/11/16

ENGINEER'S SEAL

PROJECT TITLE :

**BOILER,  
SWITCHGEAR &  
GENERATOR  
REPLACEMENT**

45 S MAIN ST  
BELAIR, MD 21014  
**BID DOCUMENTS  
MARCH 21, 2016**

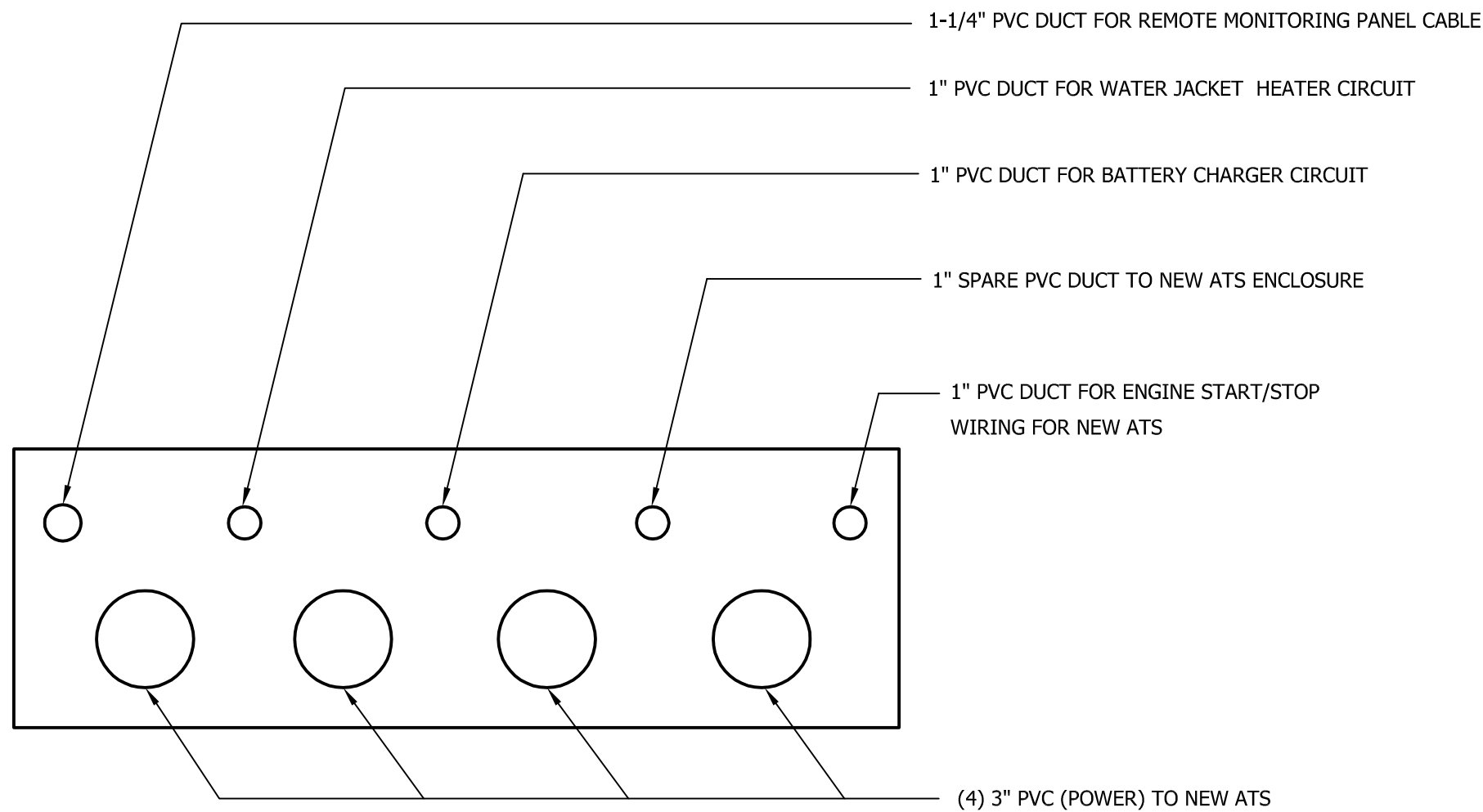
A/E PROJECT NO. : 13055.03  
DRAFTED BY: DB  
DESIGNED BY: DBP  
CHECKED BY: DBP  
DATE: 06/26/2015

REVISIONS		
NO	DATE	ITEM

SHEET TITLE :

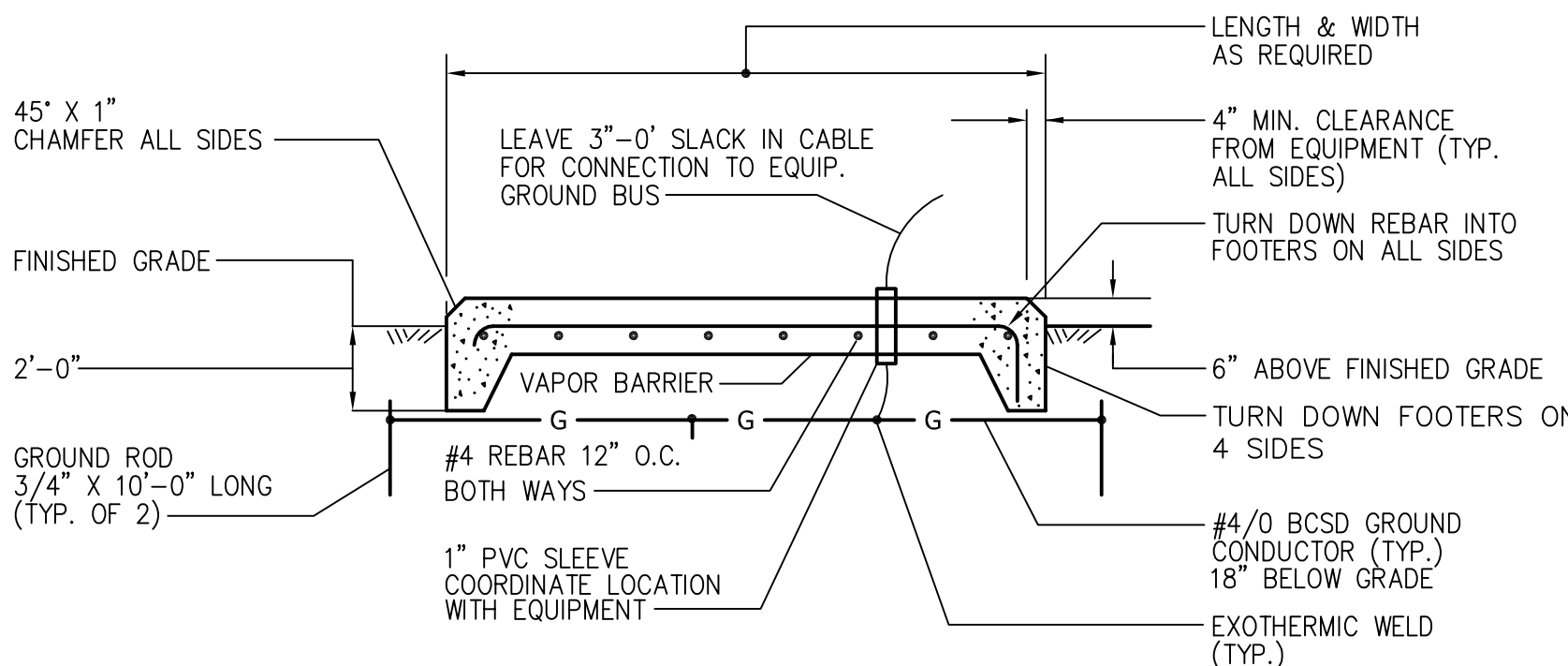
**ELECTRICAL RISER  
DIAGRAM**

SHEET No.  
**E401**



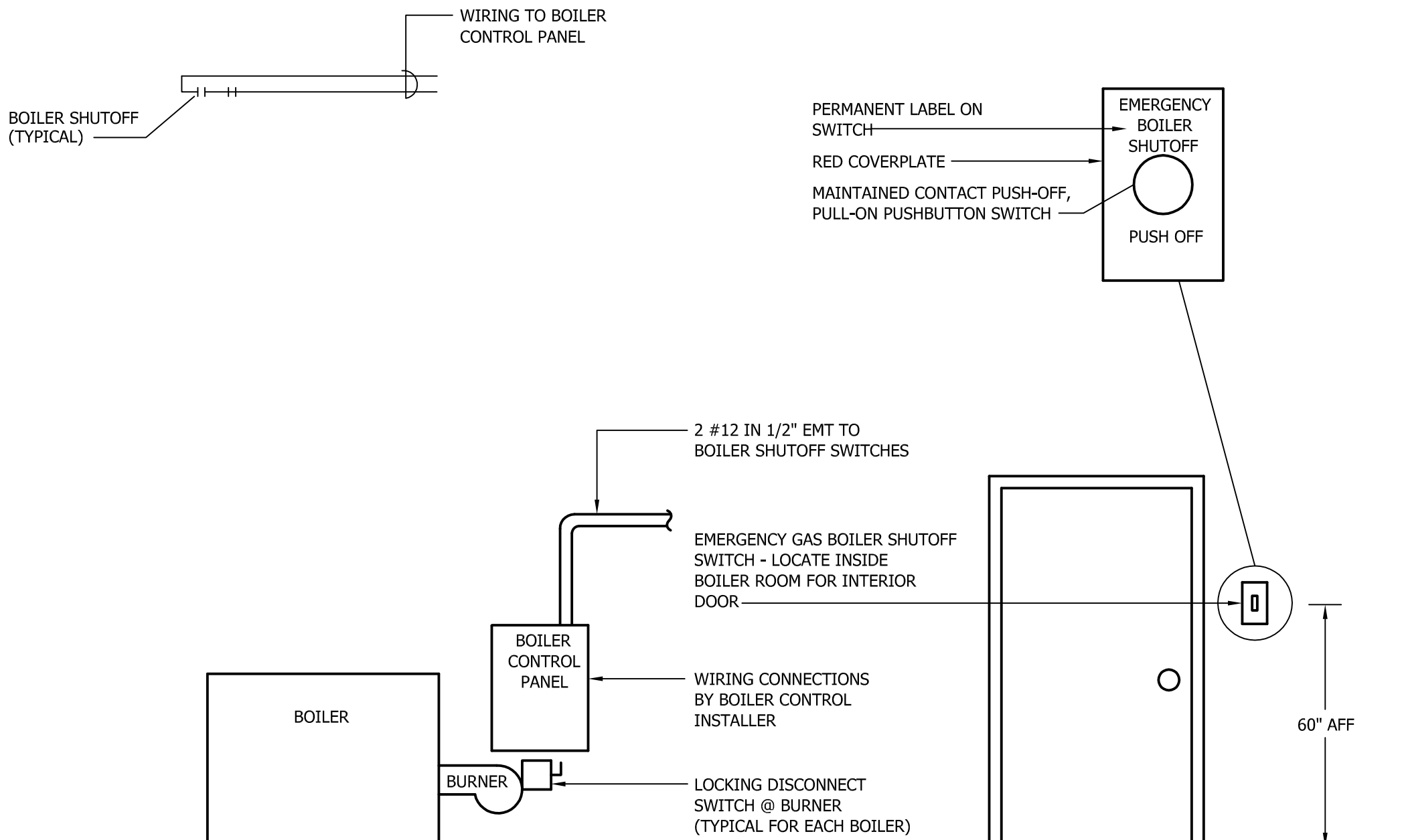
## DETAIL- GENERATOR DUCTBAND

SCALE: NONE



NOTE: COORDINATE CONDUIT PENETRATIONS WITH REBAR & EQUIPMENT

## DETAIL- TYPICAL CONCRETE PAD - GENERATOR



## DETAIL- GAS BOILER/WATER HEATER EMERGENCY SHUTOFF

KIBART, INC © 2007 FILE: P:\2013\13055.03\DRAWINGS\HARFORD COUNTY SHERIFF'S OFFICE\SCHEDULES\ELECTRICAL\13055.03-E801 SCHEDULES - ELECTRICAL.DWG PLOTTED: 2015-06-25 BY: DAVID B. PANEX

HVAC EQUIPMENT ELECTRICAL CONNECTION SCHEDULE																			
#	ITEM DESCRIPTION	HP	KW	AMPS	MOCP	VOLT/ϕ	STARTER				SEPARATE DISC. SWITCH		FUSE SIZE	THERMAL SWITCH	NEMA ENCL.	CIRCUIT #	EMERG POWER	COMMENTS	DWG. NO.
							SIZE	HOA	AUX CONT.	COMB. FUSED SWITCH	NON FUSED	FUSED							
1	B-1	-	-	2.7	-	120/1ϕ	-	-	-	-	1P-30A	-	-	-	1	EP-35	X		
2	B-2	-	-	2.7	-	120/1ϕ	-	-	-	-	1P-30A	-	-	-	1	EP-37	X		
3	P-1	3	-	4	-	460/3ϕ	-	-	-	-	-	-	-	-	1	MDP-2	X	CONNECT TO UNIT VFD ①	
4	P-3	3	-	4	-	460/3ϕ	-	-	-	-	-	-	-	-	1	MDP-14	X	CONNECT TO UNIT VFD ①	
5	P-4	7.5	-	9.2	-	460/3ϕ	-	-	-	-	-	-	-	-	1	MDP-20	X	CONNECT TO UNIT VFD ①	
6	P-7	3	-	4	-	460/3ϕ	-	-	-	-	-	-	-	-	1	MDP-32	X	CONNECT TO UNIT VFD ①	
7	P-8	1	-	1.5	-	460/3ϕ	0	X	X	3P-30A	-	-	3A	-	1	MDP-37	X		
8	P-9	1	-	1.5	-	460/3ϕ	0	X	X	3P-30A	-	-	3A	-	1	MDP-44	X		

DRAWING NOTES

- ① PROVIDE CONNECTION TO VFD AND FROM VFD TO MOTOR.

SURFACE MOUNTED PANEL MDP 277/480 VOLT 3 PHASE 4 WIRE 800 AMP BUS 500 AMP MAIN BREAKER 10,000 A.I.C.																							
CKT NO.	FOR	BRANCH BREAKERS				#	WIRING				COND.	CKT NO.	FOR	BRANCH BREAKERS				#	WIRING				COND.
		FRAME	POLES	TRIP	SETS		#	SIZE	GND	FRAME				POLES	TRIP	SETS	#		SIZE	GND			
1	AIR HANDLING UNIT #1	100	3		20	1	3	12	12	3/4"	2	P-1	100	3		15	1	3	12	12	3/4"		
3	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	4	-----	-----	-----	-----	-----	-----	-----	-----	-----			
5	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	6	-----	-----	-----	-----	-----	-----	-----	-----	-----			
7	AIR HANDLING UNIT #2	100	3		20	1	3	12	12	3/4"	8	SHERIFF STEAM CCH	100	3		15	1	3	12	12	3/4"		
9	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	10	-----	-----	-----	-----	-----	-----	-----	-----	-----			
11	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	12	-----	-----	-----	-----	-----	-----	-----	-----	-----			
13	AIR HANDLING UNIT #3	100	3		20	1	3	12	12	3/4"	14	P-3	100	3		15	1	3	12	12	3/4"		
15	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	16	-----	-----	-----	-----	-----	-----	-----	-----	-----			
17	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	18	-----	-----	-----	-----	-----	-----	-----	-----	-----			
19	ATC COMPRESSOR A	100	3		15	1	3	12	12	3/4"	20	P-4	100	3		20	1	3	12	12	3/4"		
21	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	22	-----	-----	-----	-----	-----	-----	-----	-----	-----			
23	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	24	-----	-----	-----	-----	-----	-----	-----	-----	-----			
25	ATC COMPRESSOR B	100	3		15	1	3	12	12	3/4"	26	PUMP #5	100	3		15	1	3	12	12	3/4"		
27	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	28	-----	-----	-----	-----	-----	-----	-----	-----	-----			
29	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	30	-----	-----	-----	-----	-----	-----	-----	-----	-----			
31	COOLING TOWER FAN	100	3		15	1	3	12	12	3/4"	32	P-7	100	3		15	1	3	12	12	3/4"		
33	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	34	-----	-----	-----	-----	-----	-----	-----	-----	-----			
35	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	36	-----	-----	-----	-----	-----	-----	-----	-----	-----			
37	P-8	100	3		15	1	3	12	12	3/4"	38	CONDENSER	100	3		-----	-----	-----	-----	-----			
39	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	40	-----	-----	-----	-----	-----	-----	-----	-----	-----			
41	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	42	-----	-----	-----	-----	-----	-----	-----	-----	-----			
43	LP1, LP2	100	3		50	1	4	8	10	3/4"	44	P-9	100	3		15	1	3	12	12	3/4"		
45	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	46	-----	-----	-----	-----	-----	-----	-----	-----	-----			
47	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	48	-----	-----	-----	-----	-----	-----	-----	-----	-----			
49	DUCT HEATERS	100	3		50	1	3	8	10	3/4"	50	LP3, LP4	100	3		50	1	4	8	10	3/4"		
51	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	52	-----	-----	-----	-----	-----	-----	-----	-----	-----			
53	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	54	-----	-----	-----	-----	-----	-----	-----	-----	-----			
55	ELEVATOR	100	3		70	1	3	4	8	1"	56	MLL	100	3		70	1	3	4	8	1"		
57	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	58	-----	-----	-----	-----	-----	-----	-----	-----	-----			
59	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	60	-----	-----	-----	-----	-----	-----	-----	-----	-----			
61	CHILLER	225	3		125	1	3	1	6	1 1/2"	62	75 KVA XFMR	100	3		100	1	4	3	8	1 1/4"		
63	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	64	-----	-----	-----	-----	-----	-----	-----	-----	-----			
65	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	66	-----	-----	-----	-----	-----	-----	-----	-----	-----			
67	TRANSFORMER 112.5KVA	225	3		175	1	4	2/0	6	2"	68	75 KVA UPS	225	3		150	1	4	1/0	6	2"		
69	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	70	-----	-----	-----	-----	-----	-----	-----	-----	-----			
71	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	72	-----	-----	-----	-----	-----	-----	-----	-----	-----			
73	PANEL CAC	225	3		150	1	4	1/0	6	2"	74	SPD	100	3		30	1	4	8	8	3/4		
75	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	76	-----	-----	-----	-----	-----	-----	-----	-----	-----			
77	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	78	-----	-----	-----	-----	-----	-----	-----	-----	-----			
79	-----	100	1		-----	-----	-----	-----	-----	-----	80	-----	100	1		-----	-----	-----	-----	-----			
81	-----	100	1		-----	-----	-----	-----	-----	-----	82	-----	100	1		-----	-----	-----	-----	-----			
83	-----	100	1		-----	-----	-----	-----	-----	-----	84	-----	100	1		-----	-----	-----	-----	-----			

EXISTING PANEL. BOLD INDICATES NEW BREAKER & FEEDER. EX. SURFACE MOUNTED PANEL E/P 120/208 VOLT 3 PHASE 4 WIRE 225 AMP BUS MAIN LUGS ONLY 10,000 A.I.C.																					
CKT NO.	FOR	BRANCH BREAKERS			#	WIRING			COND.	CKT NO.	FOR	BRANCH BREAKERS			#	WIRING			COND.		
		FRAME	POLES	TRIP		SETS	#	SIZE				GND	FRAME	POLES		TRIP	SETS	#		SIZE	GND
1		100	3		60	1	3	6	10	1"	2		100	3		100	1	3	3	8	1 1/4"
3		----	----	----	----	----	----	----	----	----	4		----	----	----	----	----	----	----	----	
5		----	----	----	----	----	----	----	----	----	6		----	----	----	----	----	----	----	----	
7		100	3		40	1	3	8	10	3/4"	8	EMERG PUSH B	100	1		15	1	2	12	12	3/4"
9		----	----	----	----	----	----	----	----	----	10		100	1		----	----	----	----	----	
11		----	----	----	----	----	----	----	----	----	12		100	1		----	----	----	----	----	
13		100	3		15	1	3	12	12	3/4"	14	HALON PANEL	100	1		----	----	----	----	----	
15		----	----	----	----	----	----	----	----	----	16		100	1		----	----	----	----	----	
17		----	----	----	----	----	----	----	----	----	18		100	3		100	1	3	3	8	1 1/4"
19	GAS PUMP SHUNT TRIP	100	2		15	1	2	12	12	3/4"	20		----	----	----	----	----	----	----	----	
21		----	----	----	----	----	----	----	----	----	22		----	----	----	----	----	----	----	----	
23	SPACE	100	1		----	----	----	----	----	----	24		100	1		----	----	----	----	----	
25		100	3		100	1	3	3	8	1 1/4"	26		100	1		----	----	----	----	----	
27		----	----	----	----	----	----	----	----	----	28		100	2		----	----	----	----	----	
29		----	----	----	----	----	----	----	----	----	30		----	----	----	----	----	----	----	----	
31	GENERATOR JACKET HEATER	100	2		25	1	2	10	10	3/4"	32	GENSET BATT CHARGER	100	1		20	1	2	12	12	3/4"
33	-----	----	----	----	----	----	----	----	----	----	34	SPACE	100	1		----	----	----	----	----	
35	B-1	100	1		15	1	2	12	12	3/4"	36	SPACE	100	1		----	----	----	----	----	
37	B-2	100	1		15	1	2	12	12	3/4"	38	SPACE	100	1		----	----	----	----	----	
39	BOILER CONTROL PANEL	100	1		20	1	2	12	12	3/4"	40	SPACE	100	1		----	----	----	----	----	
41	SPACE	100	1		----	----	----	----	----	----	42	SPACE	100	1		----	----	----	----	----	

CONSULTING ENGINEERS

KIBART

CONSULTING ENGINEERS

901 Dulaney Valley Road, Suite 301  
Towson, MD 21204

Phone 410-494-1111  
Fax 410-494-1112

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

LICENSE No : 17655  
EXPIRATION DATE : 1/11/16

ENGINEER'S SEAL

PROJECT TITLE :

**BOILER, SWITCHGEAR & GENERATOR REPLACEMENT**

45 S MAIN ST  
BELAIR, MD 21014

**BID DOCUMENTS  
MARCH 21, 2016**

A/E PROJECT NO. : 13055.03

DRAFTED BY: DB

DESIGNED BY: DBP

CHECKED BY: DBP

DATE: 06/26/2015